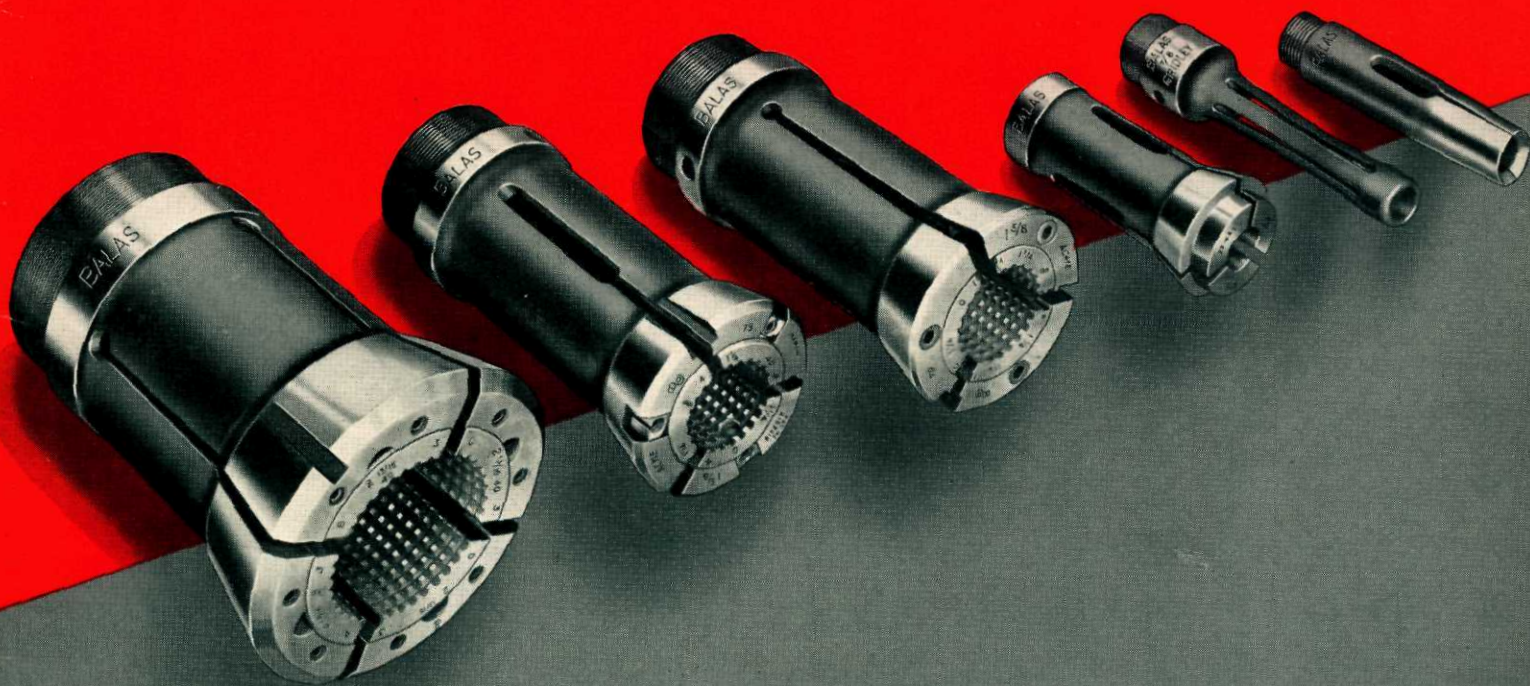


# BALAS COLLETS

*"Tough and True Running"*



**BALAS COLLET MANUFACTURING CO.**

**CLEVELAND 14, OHIO**

Trade  
Cat  
.B172  
1950

# BALAS MASTER COLLETS

## BALAS Cam Ground Collets are 7 ways better

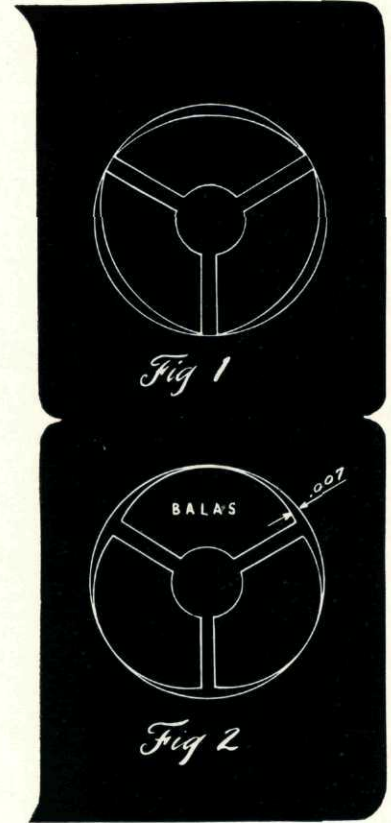
There are seven reasons why you can increase the performance of your machines and do better work with Balas Collets, cam ground on the taper to a "Cloverleaf" shape.

Refer to the diagrams at the right and note how, in Figure 1, round ground collets bear on the edges of the collet segment and tend to stick and allow the work to chatter. Figure 2, shows how Balas Cam Ground Collets always bear at the center of the taper regardless of whether or not the stock runs true to size.

Five years ago Balas pioneered the cam ground collets and its tremendous success is forcing our competition to copy the "Cloverleaf" grind and the "Cloverleaf" name.

**Insist on Balas Cam Ground Collets and be sure of getting these seven definite advantages—**

1. No sticking in the chuck head when operating with undersized stock.
2. Faster opening.
3. Tight gripping.
4. Reduced chatter.
5. Less tendency to push stock back.
6. Chucking mechanism closes easier with less strain.
7. Much smaller amount of breakage.



## BALAS "CB" COLLETS

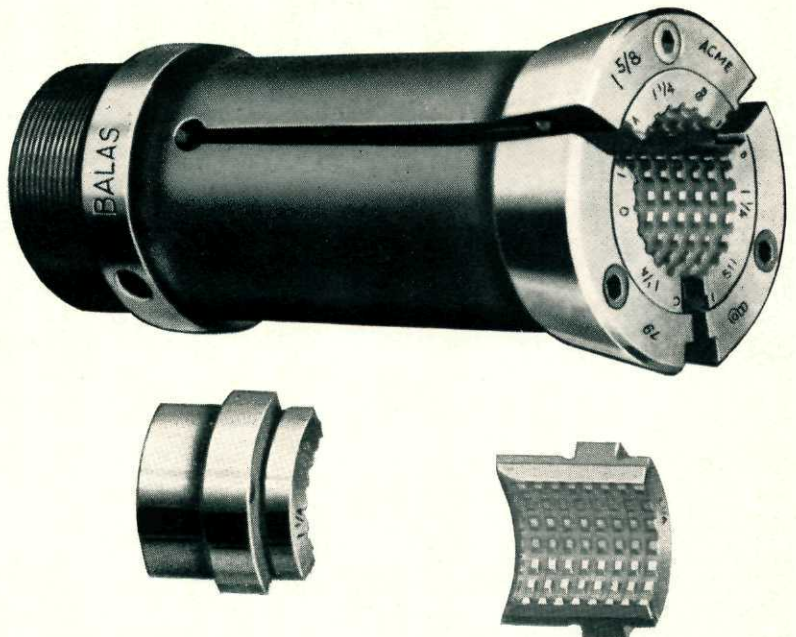
U. S. PAT. NO. 2,228,337

"CB" Collets are used as standard equipment by National Acme on machines up to 3½" capacity. "CB" Collet Pads are interchangeable from one collet to another for different makes of machines, providing the bar capacity of each machine is of the same size.

The "CB" Collet is a front loading collet. Pads are held securely in place by a patented device using an Allen cup-point set screw.

With the "CB" Master Collet, the machine may be used to its full size bar capacity as rated by the manufacturer.

A proven device, saves time on set ups, saves cost on tooling. Collets for all popular machines can be shipped from stock.



# BALAS MASTER COLLETS

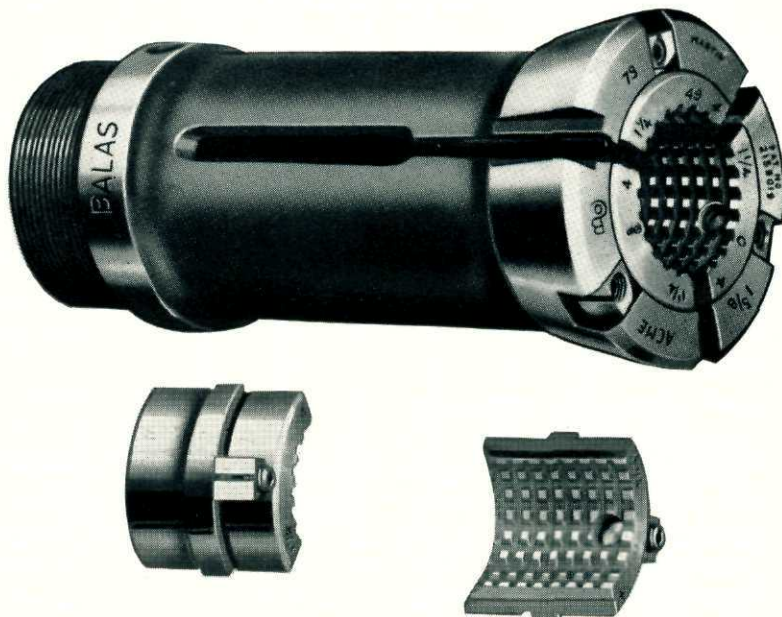
## MARTIN Master Collets

U. S. PAT. NO. 2,291,398

Martin Master Collets are used as standard equipment by the leading builders of Automatic Screw Machines.

They handle stock to the full capacity of the machine and therefore reduce collet inventory. Pads can be inserted without removing collets from spindle, they are securely held—never work loose during operation. Pads can be furnished for any shape bar stock.

Martin Master Collets always run true, and reduce set-up time considerably—they do more and better work.



## BALAS "CT" COLLETS

The "CT" Master Collet is used as standard equipment on National Acme machines of  $4\frac{3}{4}$ " capacity and larger.

These Master Collets offer the advantage of quick and economical change-over to different stock sizes by changing only the pads.

In the "CT" Collet, the pads are held securely in place with two set screws and the pads may be removed without disturbing the setting of the collet.

An indispensable device on the larger machines where the cost of tooling becomes a large item.



# BALAS PUSHERS

## BALAS Pusher solve difficult feeding jobs . . . increase production . . . reduce stock waste

All Balas Pushers are machined from solid bar stock, using the most suitable grade of tool steel thus resulting in a combination of proper spring tension as well as a very hard bearing area.

Heat treating is done in our modern heat treating department, using the latest type salt baths under rigid temperature controls.

Thread tolerances on all Feed Fingers are carefully checked to insure snug fit in the feed tube, thereby increasing the life of these parts.

Every Pusher is inspected for proper feeding ten-

sion before being shipped and satisfactory operation is guaranteed.

All Squirrel Cage Pushers are specially formed so as to reduce scratching to a minimum. Hex Squirrel Cage Pushers have broached holes to insure good contact with the bar stock.

Balas Pushers are particularly valuable on difficult feeding jobs such as long feed-outs, high speeds or scratchless operations, on round, square, rectangular, hex or any intricately shaped extruded stock.

Consult Balas on your feeding problems.

## BALAS Model "A" Master Pusher

Balas Master Pushers save time and money by permitting rapid change-over from one stock size

- No pins or screws are used.
- No small parts to become loose through vibration.
- Pads are engaged within the master and cannot rotate.
- Pads are held firmly to absorb rotating thrust.
- Pads can be removed quickly and easily.

to another by merely changing the pads. Their unique construction offers all these advantages—

- Pads are heat-treated to hardness exceeding that of the body.
- Body is tempered to high spring tension.
- Thread ends are toughened, yet a high degree of resiliency is maintained throughout remainder of body.
- Pads furnished in either steel, cast-iron or hardened Meehanite.

Prices on Cast-Iron Meehanite  
or Bronze Pads  
on application.

Wrenches regularly furnished  
with Pushers.



# BALAS PUSHERS

## BALAS Squirrel Cage Pushers are made for every machine

All Balas Squirrel Cage Pushers are machined from solid bar stock since tubing has been found unsuitable for this application.

Machining Pushers from bar stock makes possible the "reduced type" Feed Finger. The  $\frac{7}{8}$ " Gridley Feed Fingers illustrated below demonstrate the advantages of the "reduced type".

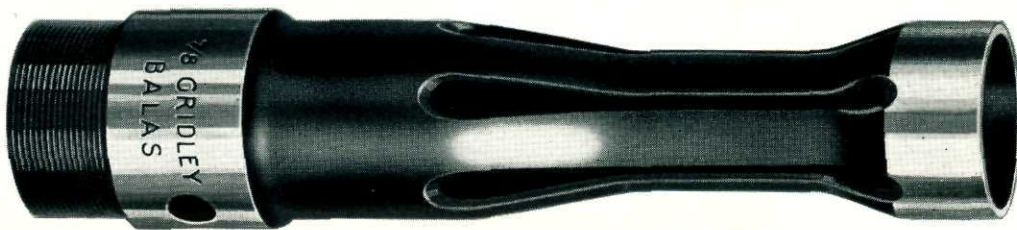
Using the  $\frac{7}{8}$ " Gridley Feed Finger as an example, when the size of stock is under  $\frac{9}{16}$ ", a finger with the smaller body is supplied. This makes it possible to avoid the drastic crushing from large to small size—a practice which often results in

unsatisfactory feeding, extremely long bar ends and early failure of the finger.

Hexagon Pushers are properly broached to assure a perfect bearing on the bar and to guard against scratching. Balas Squirrel Cage Feed Fingers always maintain a uniform grip around the bar stock.

A few "whacks" with a hammer will change tensions to suit conditions. A few more "whacks" will alter the diameter to accommodate a slightly different size bar.

Orders will be interpreted as Conventional Pushers unless "Squirrel Cage" is definitely specified.



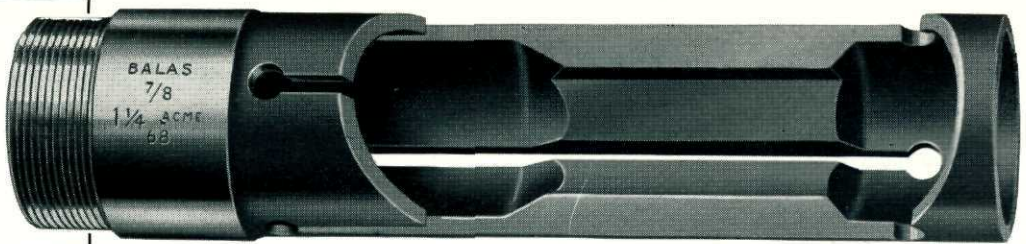
Squirrel Cage Pusher



"Reduced Type" Feed Fingers

# BALAS PUSHERS and FEED FINGERS

## Heavy Duty cage - type pushers



This cage type pusher is made of regular collet steel by machining it to size and shape on all dimensions instead of bending it to shape, as is the practice with Squirrel Cage Pushers.

Its advantages are that it has longer bearing surfaces which conform perfectly to the material and it is much more rugged.

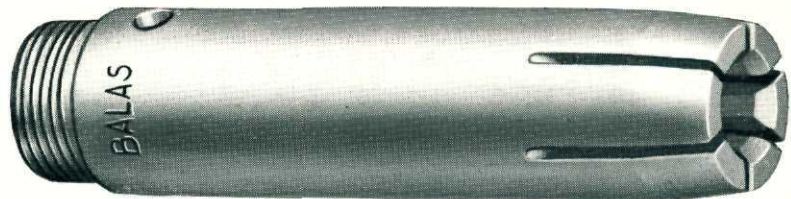
The Heavy Duty Cage Type Pusher does its most spectacular work on large and over-capacity sizes or on long runs.

When bronze feeders are required, this design is far superior to any other type.

Tension is adjusted in the same manner as the Squirrel Cage Pusher.

## "STOK-SAVER" FEED FINGER

something new  
something different  
something  
with a future



Here is a new type feed finger that has all the features of adjustability of tension of the Squirrel Cage type without the disadvantage of the long bar ends associated with the Squirrel Cage Feed Finger.

In every case of experimental operation in many shops, over a long period, the "Stok-Saver" Feed Finger has proven that it will stand up in service better than any other design we have yet tested. Names and locations of plants using this new

design will be supplied upon request.

The "Stok-Saver" Feed Finger has been designed with a greater overall length so that it will use up the bar ends almost completely, reducing the ends to the length of the bearing in the collet plus the projection from the face of the collet to the cut off tool. In many cases it has saved from three to five inches on bar ends.

This feed finger costs no more than the standard Squirrel Cage type.

**MAKE BALAS YOUR SOURCE OF SUPPLY**

# BALAS SPOOL BUSHINGS and STOCK STOPS

## NEW SPEEDY SERVICE on pusher tube spool bushings

We are pleased to announce that we offer two-day service on Pusher Tube Spool Bushings. These factory duplicate parts are made to give long service . . . at low prices, too!

Acme Gridley Models RB-RA-RAS-R	3/8"	\$1.25
" " " "	9/16"	1.25
" " " "	1 1/8"	1.25
" " " "	1 1/4"	2.10
" " " "	1 3/8"	2.10
" " " "	1 5/8"	2.60
" " " "	2"	2.60
" " " "	2 1/4"	2.80
" " " "	2 5/8"	3.10
" " " "	3"	4.70
" " " "	3 5/16"	4.70
" " " "	3 1/2"	5.50
" " " "	4 3/4"	7.00
" " " "	5"	7.50

Larger Sizes Upon Application.

Acme Machines Model B	2"	4.15
" " " "	2 1/4"	4.70
" " " "	2 3/4"	5.15
" " " "	3"	5.15
" " " "	3 5/16"	5.75
" " " "	3 3/4"	10.75
" " " "	4"	10.75

Acme Machines Model C	9/16"	1.25
" " " "	1"	2.10
" " " "	1 5/8"	2.60

Gridley Machines F-G GA-J-K-L	9/16" G	1.25
" " " "	7/8" G	1.25
" " " "	1 1/4" G & GA	2.10
" " " "	1 3/8" G & GA	2.10
" " " "	1 1/2" GA	2.10
" " " "	1 5/8" GA	2.60
" " " "	1 3/4" G	2.60
" " " "	2" G	2.60
" " " "	2 5/8" G & GA	3.10
" " " "	2 7/8" G	3.10
" " " "	3" G	4.70
" " " "	3 5/16" GA	4.70

Gridley Machines F-G GA-J-K-L (continued)	3 1/2" GA	\$ 5.50
" " " "	3 3/4" F	1.25
" " " "	7/8" F	1.25
" " " "	1 1/4" F	2.10
" " " "	1 3/8" F	2.10
" " " "	1 3/4" F	2.60
" " " "	2 1/4" F	2.80
" " " "	2 5/8" F	3.10

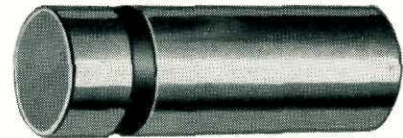
Gridley Single Spindle Automatic	2 1/4" J-K & L	2.80
" " " "	3 1/4" J-K & L	4.55
" " " "	4 1/4" J-K & L	6.35
" " " "	5" J-K & L	6.35

Cone Automatics	7/8"	2.50
" " " "	1"	2.50
" " " "	1 1/4"	2.50
" " " "	1 1/2"	2.85
" " " "	1 5/8"	2.85
" " " "	1 7/8"	2.85
" " " "	2"	3.80
" " " "	2 1/4"	4.50
" " " "	2 3/8"	4.50
" " " "	3 1/2"	5.65
" " " "	4"	6.90
" " " "	4 3/8"	6.90
" " " "	4 3/4"	6.90
" " " "	5"	8.20
" " " "	6"	8.85
" " " "	7"	10.25

New Britain Automatics	5/8"	2.00
" " " "	7/8"	2.30
" " " "	1"	2.30
" " " "	1 1/4"	2.70
" " " "	1 3/8"	2.70
" " " "	1 3/4"	2.50
" " " "	1 5/8"	3.00
" " " "	2"	3.00
" " " "	2 1/4"	3.25
" " " "	2 5/8"	4.10

## TUNGSTEN-CARBIDE FACED STOCK STOPS

for Brown & Sharpe machines only



Here's relief from troublesome grief now experienced by Brown & Sharpe operators. These Balas Stock Stops with the Carboloy face are designed to eliminate the difficulties experienced with revolving stock stops that do not operate properly.

### ONLY BALAS STOCK STOPS HAVE ALL THESE ADVANTAGES:

- Carboloy face is practically indestructible.
- Not limited to distance it can be inserted into the turret.
- Made in two different lengths for each size machine.
- Carboloy face is non-scuffing and non-scoring.
- No ball bearings to stick or break.
- Shanks are hardened to avoid nicking or scratching by the clamping mechanism.
- Priced lower than revolving stock stops.

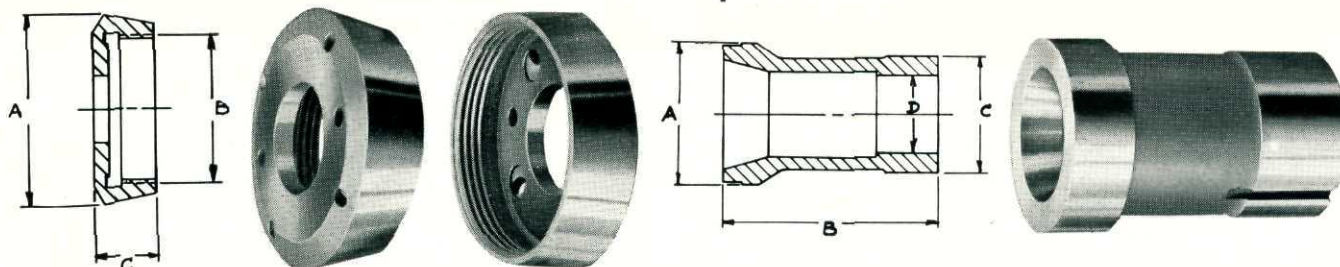
The face of the Balas Stock Stop being made of Carboloy will not scuff or pick up material from the end of the bar, causing variations in length or damage to the finished end of the piece. Change to Balas Stock Stops and reduce scrap losses.

		Quantity	
		Less than 6	6 or more
#00	B&S 5/8" x 2" long	\$6.00 each	\$5.00 each
#00	B&S 5/8" x 2 3/4" "	6.00 "	5.00 "
# 0	B&S 3/4" x 2 1/4" "	7.00 "	5.85 "
# 0	B&S 3/4" x 3 5/8" "	7.00 "	5.85 "
# 2	B&S 1" x 2 7/8" "	8.00 "	7.00 "
# 2	B&S 1" x 4 5/16" "	8.00 "	7.00 "

Immediate delivery from stock in any quantity.

# BALAS COLLET SLEEVES and CHUCK NUTS

for Brown & Sharpe Machines



In order to obtain trouble-free performance and a minimum of scrap from your machines it is essential to have good chuck nuts and collet closing sleeves.

Balas chuck nuts and sleeves are made from high quality alloy steel, deeply carburized and hardened. They are delivered from stock.

## CHUCK NUTS

Used With Collet No.	Our Part No.	A	B	C	Net Price No Discount
00	8200	1.916"	1.4886-16RH	.39 <sup>3</sup> / <sub>64</sub> "	\$ 3.52
00B Taper Nose	8201	1.940"	1.4886-16RH	.623	3.52
00	8202	2.175"	1.741-16RH	.34"	3.52
10	8203	2.175"	1.741-16RH	.23 <sup>3</sup> / <sub>32</sub> "	3.52
11	8205	2.27 <sup>27</sup> / <sub>32</sub> "	2.363-14RH	.15 <sup>1</sup> / <sub>16</sub> "	7.59
11B Taper Nose	8204	2.27 <sup>27</sup> / <sub>32</sub> "	2.363-14RH	.15 <sup>1</sup> / <sub>16</sub> "	7.59
22	8208	3.23 <sup>23</sup> / <sub>32</sub> "	3.138-8RH	1.1 <sup>1</sup> / <sub>8</sub> "	10.84
22C Taper Nose	8210	3.23 <sup>23</sup> / <sub>32</sub> "	3.138-8RH	1.1 <sup>1</sup> / <sub>8</sub> "	10.84
22	8206	3.25 <sup>25</sup> / <sub>32</sub> "	3.003-8RH	1.1 <sup>1</sup> / <sub>8</sub> "	10.84
22B Taper Nose	8207	3.25 <sup>25</sup> / <sub>32</sub> "	3.003-8RH	1.1 <sup>1</sup> / <sub>8</sub> "	10.84
22	8209	3.25 <sup>25</sup> / <sub>32</sub> "	3.387-8RH	1.1 <sup>1</sup> / <sub>8</sub> "	17.60
22C Taper Nose	8212	3.25 <sup>25</sup> / <sub>32</sub> "	3.387-8RH	1.1 <sup>1</sup> / <sub>8</sub> "	17.60
22D Taper Nose	8213	3.25 <sup>25</sup> / <sub>32</sub> "	3.387-8RH	1.1 <sup>1</sup> / <sub>8</sub> "	17.60

When ordering Chuck Nuts, please specify our Part Number, NOT MACHINE NUMBER OR COLLET NUMBER. If unable to identify the Chuck Nut desired from the information given above, please submit sample or sketch.

## COLLET SLEEVES

Used With Collet No.	Our Part No.	Cap.	A	B	C	D	Net Price No Discount
00	8225	.3 <sup>3</sup> / <sub>8</sub> "	1.062"	2.872"	.875"	.19 <sup>1</sup> / <sub>32</sub> "	\$ 4.22
00B	8226	.3 <sup>3</sup> / <sub>8</sub> "	1.062"	2.746"	.875"	.19 <sup>1</sup> / <sub>32</sub> "	4.22
00	8227	.7 <sup>1</sup> / <sub>16</sub> "	1.0625"	2.878"	1.000"	.7187"	9.15
00B							
00B							
00B							
10	8238	.1 <sup>1</sup> / <sub>2</sub> "	1.3125"	2.4385"	1.872"	.23 <sup>3</sup> / <sub>32</sub> "	5.63
10B	8228	.1 <sup>1</sup> / <sub>2</sub> "	1.3215"	2.378"	1.187"	.23 <sup>3</sup> / <sub>32</sub> "	5.63
11	8229	.5 <sup>5</sup> / <sub>8</sub> "	1.750"	3.311"	1.3745"	.880"	7.74
11B							
11	8231	.3 <sup>3</sup> / <sub>4</sub> "	1.875"	2.813"	1.4997"	1.0625"	8.45
11C	8230	.3 <sup>3</sup> / <sub>4</sub> "	1.875"	2.813"	1.4997"	1.1 <sup>1</sup> / <sub>16</sub> "	9.15
22	8232	1"	2.250"	4.187"	1.8747"	1.11 <sup>1</sup> / <sub>32</sub> "	11.97
22B	8233	1.3 <sup>3</sup> / <sub>8</sub> "	2.250"	4.186"	1.8747"	1.1 <sup>1</sup> / <sub>16</sub> "	13.38
22	8239	1"-1.1 <sup>1</sup> / <sub>4</sub> "	2.500"	4.270"	2.1247"	1.500"	14.52
22C	8237	1.1 <sup>1</sup> / <sub>4</sub> "	2.500"	4.270"	2.1247"	.19 <sup>1</sup> / <sub>16</sub> "	14.52
22	8236	1.1 <sup>1</sup> / <sub>2</sub> "	2.750"	4.255"	2.437"	1.500"	19.71
22C	8234	1.1 <sup>1</sup> / <sub>4</sub> "	2.750"	4.263"	2.4375"	.19 <sup>1</sup> / <sub>16</sub> "	19.71
22D	8235	1.1 <sup>1</sup> / <sub>2</sub> "	2.750"	4.280"	2.4375"	1.15 <sup>1</sup> / <sub>16</sub> "	19.71

Please order by our part number, not by Collet Number. If unable to identify Collet Sleeve desired from information shown above, please submit sample or sketch.

## HOW TO ORDER

Specify the size, model, serial number and make of machine as listed in our catalog.

Specify the size of bar stock the parts are to be used on and whether Round, Hexagon or Square. When order does not specify square or hex, parts are always made round.

In ordering collets or pushers, specify the number of pieces required.

In ordering pads for collets or pushers, specify the number of sets required.

REMEMBER . . . one set of pads is needed for each spindle. Example follows:

6 "Martin" Master Collets for 1.1<sup>1</sup>/<sub>2</sub>" Cone, 6 spindle.

6 sets of "Martin" Master Collet Pads for 1" Round stock for 1.1<sup>1</sup>/<sub>2</sub>" Cone, 6 spindle.

Specify — "Smooth" or "Serrated".

Orders for collets or pushers not cataloged should be accompanied by a sketch or sample.

# PRICE LIST—Automatic Collets, Pushers and Pads



- Lathe Collets and Brown & Sharpe parts, both collets and feed fingers, are wrapped in rust-proofing paper and packed in attractive boxes as shown.

See footnote on page 12 regarding serrations.

Machine Name	Size, Model, Serial No.	COLLETS Conv.		Collet Master	PADS Master Collet		PUSHERS Conv., Heavy Duty, and Cage Type		Pusher Master	STEEL PADS Master Pusher	
		Rd.	Hex. Sq.		Rd.	Hex. Sq.	Rd.	Hex. Sq.		Rd.	Hex. Sq.
Acme	5/8" No. 515	\$ 6.50	\$ 7.50				\$ 4.00	\$ 5.00	\$ 5.00	\$ 2.00	\$ 3.00
"	9/32" No. 51	6.50	7.50				4.00	5.00	5.00	2.00	3.00
"	3/4" No. 52 & 72	7.00	8.00				5.40	6.00	6.00	2.00	3.00
"	1" No. 53 & 73	8.00	9.00	\$ 9.00	\$ 5.00	\$ 6.00	6.50	7.50	7.50	3.50	4.50
"	1 3/8" No. 54	11.70	12.70	12.70	6.00	7.00	7.70	8.70	8.70	4.50	5.50
"	1 5/8" No. 55 & 75	13.50	14.50	14.50	7.00	8.00	10.50	11.50	11.50	6.00	7.00
"	2 1/4" No. 56 & 76	27.90	28.90	28.90	8.00	9.00	20.00	21.00	21.00	8.00	8.75
Acme	2"-B	27.00	28.00	28.00	9.25	10.25	20.00	21.00	21.00	6.50	7.25
"	2 1/4"-B	36.00	37.00	37.00	9.25 A	10.25	23.40	24.40	24.40	8.00	8.75
"	2 3/4"-B	45.00	47.00	47.00	11.75	12.75	23.00	25.00	25.00	10.00	10.75
"	3"-B	50.00	52.00	52.00	12.50	13.50	30.00	32.00	32.00	11.00	12.00
"	3 5/16"-B	52.00	54.00	54.00	15.00	16.00	33.00	35.00	35.00	12.00	13.00
"	3 3/4"-B P. O.	55.00	57.00	57.00	16.50	17.50	35.00	37.00	37.00	13.00	14.00
"	4"-B	60.00	62.00	62.00	17.50	18.50	42.00	44.00	44.00	14.00	15.00
Acme	9/16"-C	6.50	7.50				4.00 A	5.00	5.00	2.20	3.20
"	1"-C	9.60 B	10.60 A	11.80	5.00	6.00	6.80	7.80	7.80	3.50	4.50
"	1 5/8"-C	17.50 A	18.50	18.50	6.00 A	7.00 D	12.60	13.60	13.60	4.50	5.50
Acme-Gridley	3/8"-R	6.50	7.50				4.00	5.00			
"	9/16"-R -RA	6.50 B	7.50 D				4.00 B	5.00 D	5.00 G	2.20	3.20
"	3/4"-R	7.20	8.20				6.30	7.30	7.30	3.20	4.20
"	7/8"-R -RA	7.20	8.20				6.30	7.30	7.30	3.20	4.20
"	1"-R -RA -RAS	9.60 B	10.60 D	11.80 G	5.00 A	6.00 D	6.80 B	7.80 D	7.80	3.50	4.50
"	1 1/4"-R -RA	10.80 B	11.80 D	11.80 G	6.00 A	7.00 D	7.40 B	8.40 D	8.40	4.50	5.50
"	1 3/8"-R -RA	12.00	13.00	13.00	6.00	7.00	8.10	9.10	9.10	4.50	5.50
"	1 5/8"-R -RA -RB	17.50 A	18.50 G	6.00 A	7.00 D	12.60 A	13.60	13.60	13.60	4.50	5.50
"	2"-R -RA -RAS -RB	27.00	28.00	28.00 G	8.00 A	9.00 D	20.00	21.00	21.00	5.50	6.25
"	2 1/4"-R -RA	36.00	37.00	37.00	10.00 A	11.00 D	23.40	24.40	24.40	8.00	8.75
"	2 5/8"-R -RA -RB	45.00	47.00 G	47.00 G	11.50 A	12.50 D	27.00	29.00	29.00 G	9.75	10.50 D
"	3"-R -RA	50.00	52.00	52.00	12.50	13.50	30.00	32.00	32.00	11.00	12.00
"	3 5/16"-R	52.00	54.00	54.00	15.00	16.00	33.00	35.00	35.00	12.00	13.00
"	3 1/2"-R -RA -RB	54.00	56.00	56.00	16.00	17.00	36.00	38.00	38.00	12.50	13.50
"	4 3/4"-R -RA -RB	70.00	72.00	72.00	22.50	23.50	50.00	52.00	52.00	20.50	21.50
"	5"-R -RB	75.00	77.00	77.00	27.50	29.50	55.00	57.00	57.00	25.00	27.00
"	5 1/4"-R -RB	80.00	82.00	82.00	32.50	35.50	60.00	62.00	62.00	31.00	33.00

A — round by 16ths  
E — hex by 32nds

B — round by 32nds  
F — hex by 64ths

C — round by 64ths  
G — masters in stock

D — hex by 16ths  
I — serrated round by 16ths

Red key letters indicate size increments of parts that are carried in stock for "Same day Service" — Phone MAin 1-3734.

# BALAS

## PRICE LIST—Automatic Collets, Pushers and Pads

See footnote on page 12 regarding serrations.

Machine Name	Size, Model, Serial No.	COLLETS Conv.		Collet Master	PADS Master Collet		PUSHERS Conv., Heavy Duty, and Cage Type		Pusher Master	STEEL PADS Master Pusher	
		Rd.	Hex. Sq.		Rd.	Hex. Sq.	Rd.	Hex. Sq.		Rd.	Hex. Sq.
Brown & Sharpe #00 & #00G Auto.	Prior to 12852	Item No.									
	to 5/16" Cap.	#00	\$ 4.70 C	\$ 9.25 E			\$ 2.60 C	\$ 4.65 E			
		#00B	4.70	9.25							
		#00M							\$ 2.80 G	\$1.50	\$ 2.33
	Start 12852										
	to 3/8" Cap.	#10	5.50 C	9.25 E			3.50 C	4.95 E			
		#10B	5.50	10.50							
		#10M							3.62 G	1.83	2.67
	3/8" to 1/2"	#10	5.50 C	9.25 E							
		#10B	5.50	10.50							
		#10A					3.50 C	4.95 E	3.62	1.83	2.67
		#10AM									
	(#00 only)	3448 to 12851									
	(#00G only)	3098 to 12851									
	5/16" to 3/8"	#00	4.70 C	9.25 E							
Brown & Sharpe #0 & #0G Auto.	5/16" to 3/8"	#00B	4.70	9.25			2.60 C	4.65 E	2.80 G	1.50	2.33
		#00A									
	3/16" Rd. Feed Tube	#00D					3.80	6.10			
	All Machines										
	to 5/16" Cap.	#00	4.70 C	9.25 E			2.60 C	4.65 E			
		#00B	4.70	9.25							
		#00M							2.80 G	1.50	2.33
	5/16" to 3/8"	#00	4.70 C	9.25 E							
		#00B	4.70	9.25							
		#00A					2.60 C	4.65 E	2.80 G	1.50	2.33
Brown & Sharpe #0 & #0G Auto.	Prior to 8021										
	to 1/2" Cap.	#11	5.50 CI	9.25 E			3.50 C	4.95 E			
		#11B	5.50	9.25							
		#11M							4.04 G	2.09	2.92
	Start 8021										
	to 1/2" Cap.	#11	5.50 CI	9.25 E			3.50 C	4.95 E			
		#11B	5.50	9.25							
		#11M							4.04 G	2.09	2.92
	3/8" to 5/8"	#11	5.50 C	9.25 E							
		#11B	5.50	9.25							
		#11A					3.50	4.95	4.45 G	2.09	2.92
		#11AM									
	5/8" to 3/4"	#11C	5.50	10.50							
		#21A					3.50	4.95	4.45 G	2.50	3.33
Brown & Sharpe #0 & #0G Auto.	(#0 only)	2015 to 8020									
	(#0G only)	2215 to 8020									
	1/2" to 5/8"	#11	5.50 CI	9.25 E							
		#11B	5.50	9.25							
		#11A					3.50 C	4.95 E			
		#11AM							4.45 G	2.09	2.92
Brown & Sharpe #0 & #0G Auto.	Prior to 5691										
	Prior to 5465										
	1/2" to 13/16"	#11	5.50 CI	9.25 E							
		#11B	5.50	9.25							
		#20C							22.00	7.00	9.25
Brown & Sharpe #0 & #0G Auto.	5691 to 8020										
	5465 to 8020										
	1/2" to 13/16"	#11	5.50 CI	9.25 E							
		#11B	5.50	9.25							
		#20E							32.00	7.00	9.25

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I — serrated round by 16ths

MAKE BALAS YOUR SOURCE OF SUPPLY

# BALAS

## PRICE LIST—Automatic Collets, Pushers and Pads

See footnote on page 12 regarding serrations.

Machine Name	Size, Model, Serial No.	COLLETS Conv.		Collet Master	PADS Master Collet		PUSHERS Conv., Heavy Duty, and Cage Type		Pusher Master	STEEL PADS Master Pusher	
		Rd.	Hex. Sq.		Rd.	Hex. Sq.	Rd.	Hex. Sq.		Rd.	Hex. Sq.
#2 & #2G Auto.	Start 249 to 1" Cap.....#22	\$7.30 C	\$10.20 E				\$4.40	\$5.50 E			
	#22A	9.30	14.00								
	#22M								\$5.27 G	\$2.91	\$3.75
	Prior to 2205 1 1/16" Spindle										
	1" to 1 1/4".....#22A	9.30	14.00						29.00	9.25	11.70
	#22C										
	1 1/16" Spindle										
	1" to 1 1/8".....#22B	9.30	14.00				5.50	9.25	7.41	2.91	3.75
	#22A										
	1" to 1 3/8".....#22B	9.30	14.00						29.00	9.25	11.70
	#22C										
	2205 to 7351 1" to 1 1/8".....#22B	9.30	14.00				5.50	9.25	7.41	2.91	3.75
	#22A										
	2205 to 5410 1" to 1 3/8".....#22B	9.30	14.00						29.00	9.25	11.70
	#22C										
Brown & Sharpe	5411 to 5857 5968 to 6017 1" to 1 3/8".....#22B	9.30	14.00						40.00	10.00	14.07
	#22E										
	5858 to 5967 6018 to 7351 1" to 1 3/8".....#22B	9.30	14.00								
	#22F										
	Start 7352 1" to 1 1/4".....#22C	9.30	15.75				5.50	10.50			
	#22H										
	Start 9084 1 1/2" Spindle										
	1 1/4" to 1 1/2".....#22D	14.00	21.00	\$17.70	\$9.00	\$10.00	9.25	11.15	12.98	5.00	5.83
	1 1/8" Spindle Item No.										
	to 1 1/2" Cap.....#24	24.80	44.90				20.00	30.00	21.00	9.00	18.00
	#24M			30.00	17.00	30.00			30.25	13.40	28.00
	1 1/2" to 1 7/8".....#24	24.80	44.90								
	#24MD										
	2 3/8" Spindle										
#4 Auto.	to 2" Cap.....#26	29.75	50.00				19.00	40.00	25.75	9.90	21.00
	#26M			32.75	17.00	35.00				Special	
	2" to 2 3/8".....#26	29.75	50.00								
	All Machines										
	to 2" Cap.....#26	29.75	50.00				19.00	40.00	25.75	9.90	21.00
	#26M			32.75	17.00	35.00					
	2" to 2 3/8".....#26	29.75	50.00						36.25	13.00	30.00
	#26MD										
	All Machines										
	to 3/8" Cap.....#10	5.50 C	9.25 E				3.50 C	4.95 E			
	#10B	5.50	10.50								
	#10M								3.62 G	1.83	2.67
	372 to 1503 3/8" to 1/2".....#10	5.50 C	9.25 E								
	#10B	5.50	10.50								
	#11C						3.50 C	4.95 E	5.70	2.80	3.80
#0 Wire Feed	Start 1504 3/8" to 5/8".....#10B	5.50	10.50				3.50 C	4.95 E			
	#11A										
	#11AM								4.45 G	2.09	2.92
	Prior to 227 to 1/2" Cap.....#11	5.50 C	9.25 E				3.50 C	4.95 E			
	#11B	5.50	9.25								
	#11M								4.04 G	2.09	2.92
	Start 227 to 5/8" Cap.....#21	6.10 C	9.60 E				3.50	4.95	4.45	2.50	3.33
	496 to 1715 5/8" to 3/4".....#21	6.10 C	9.60 E								
	#21A						3.50	4.95	4.45 G	2.50	3.33
	Start 1716 5/8" to 7/8".....#21A	6.10	9.60								
	#12						4.40	5.50	8.00	3.50	4.50
#1 Wire Feed											

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# BALAS

## PRICE LIST — Automatic Collets, Pushers and Pads

See footnote on page 12 regarding serrations.

Machine Name	Size, Model, Serial No.	COLLETS Conv.		Collet Master	PADS Master Collet		PUSHERS Conv., Heavy Duty, and Cage Type		Pusher Master	STEEL PADS Master Pusher	
		Rd.	Hex. Sq.		Rd.	Hex. Sq.	Rd.	Hex. Sq.		Rd.	Hex. Sb.
# 2 Wire Feed	Start 383 to 1" Cap..... # 22	7.30 C	10.20 EI				4.40 C	5.50 E			
	# 22A	9.30 C	14.00								
	# 22M								5.27 G	2.91	3.75
	864 to 2214 1" to 1 1/8"..... # 22B	9.30	14.00								
	# 22A						5.50	9.25	7.41	2.91	3.75
	Start 2215 1" to 1 1/4"..... # 22C	9.30	15.75								
# 22H						5.50	10.50				
Cleveland	3/8".....*P. O.	\$ 8.50	\$ 9.80				\$ 6.00	\$ 7.40			
"	3/8" x 1/2".....P. O.	9.00	10.30				6.70	8.10			
"	9/16".....P. O.	9.40	10.80				7.00	8.30			
"	5/8".....P. O.	10.10	11.40				7.30	8.60			
"	5/8" x 3/4".....P. O.	10.50	11.80				7.50	8.90			
"	7/8".....P. O.	10.90	12.20				7.80	9.10	\$ 6.40	\$ 3.20	\$ 4.20
"	1 1/16".....P. O.	13.30	15.30				8.70	10.70	7.75	3.50	4.50
"	1 1/4".....P. O.	13.80	15.90				9.10	11.20	8.65	4.50	5.50
"	1 3/8".....P. O.	13.80	15.90				9.40	11.40	8.65	4.50	5.50
"	1 3/8".....D. I.	SPECIAL FOR OBSOLETE MACHINE									
"	1 1/2".....P. O.	16.30	18.30				11.40	13.40	9.65	5.00	6.00
"	1 1/2".....D. I.	32.90	34.90	\$ 27.50	\$ 9.40	\$ 10.90	15.40	17.50	9.65	5.00	6.00
"	1 5/8".....D. I.	SAME MACHINE AS 1 1/2" D. I. TYPE									
"	2".....P. O.	24.20	26.90	21.20	9.40	10.90	21.80	24.40	19.30	6.00	8.00
"	2 1/2".....P. O.	37.50	40.20	31.70	11.00	13.00	26.60	29.30	23.10	7.00	9.00
"	2 1/2".....D. I.	47.00	49.70	39.20	11.00	13.00	26.60	29.30	23.10	7.00	9.00
"	2 3/4".....P. O.	51.00	53.70	42.40	13.00	15.00	36.90	39.60	31.20	8.00	10.00
"	3".....P. O.	61.80	65.20	51.40	14.50	17.00	44.30	47.70	37.60	10.00	12.50
"	3 1/2".....D. I.	83.30	86.60	68.30	27.50	30.00	49.70	53.10	41.80	12.00	14.50
"	3 3/4".....P. O.	75.20	78.60	61.90	22.00	24.50	56.40	59.80	47.10	14.00	16.50
"	3 3/4".....D. I.	84.60	88.00	69.40	22.00	24.50	56.40	59.80	47.10	14.00	16.50
"	4 1/4".....P. O.	198.80	202.80	159.90	43.00	46.00	130.30	134.30	105.80	24.00	27.00
"	4 1/2".....P. O.	198.80	202.80	159.90	43.00	46.00	130.30	134.30	105.80	24.00	27.00
"	5 3/4".....P. O.	241.80	247.20	194.70	49.50	53.50	154.50	159.80	125.90	29.00	33.00
"	5 3/4".....D. I.	263.30	268.70	211.60	49.50	53.50	154.50	159.80	125.90	29.00	33.00
"	6 3/4".....P. O.	275.40	282.10	222.20	56.00	61.00	167.90	174.60	137.50	34.00	39.00
"	7 3/4".....P. O.	319.70	327.80	258.20	64.00	70.00	185.30	193.40	152.40	42.00	48.00
All other Cleveland Automatics on application											
* P. O. — Push Out Type. D. I. — Draw In Type.											
Cone	7/8".....	7.20	8.20	8.20 G	4.10	4.75	6.30	7.30	7.30 G	3.20	4.20
"	1".....	8.30	9.30	9.30 G	5.00	6.00	6.80	7.80	7.80 G	3.50	4.50
"	1 1/4".....	10.80	11.80	11.80 G	6.00 A	7.00 D	7.20	8.20	8.20 G	4.00	5.00
"	1 1/2".....	13.50	14.50	14.50 G	7.00 A	8.00	9.00	10.00	10.00 G	5.00 A	6.00
"	1 5/8".....	17.50	18.50	18.50 G	7.50 A	8.50 D	12.60	13.60	13.60 G	5.25 A	6.25
"	1 7/8".....	21.60	22.60	22.60	8.00	9.00	16.20	17.20	17.20	6.00	8.00
"	2".....	27.00	28.00	28.00 G	9.00	10.00	20.00	21.00	21.00	7.00	8.75
"	2 1/4".....	36.00	37.00	37.00 G	10.00	11.00	23.40	24.40	24.40 G	8.00	8.75
"	2 1/2" & 2 5/8".....	45.00	47.00	47.00 G	11.50 A	12.50 D	27.00	29.00	29.00 G	9.75 A	10.50
"	3 1/2".....	54.00	56.00	56.00	16.00	17.00	36.00	38.00	38.00 G	12.50	13.50
"	4".....	60.00	62.00	62.00	17.50	18.50	39.00	41.00	41.00	14.00	15.00
"	4 1/4".....	65.00	67.00	67.00	18.00	19.00	42.00	44.00	44.00	15.00	16.00
"	4 3/8".....	67.50	69.50	69.50	18.50	19.50	45.00	47.00	47.00	16.25	17.00
"	4 1/2".....	70.00	72.00	72.00	22.50	23.50	50.00	52.00	52.00	20.25	21.00
"	4 3/4".....	75.00	77.00	77.00	27.50	28.50	55.00	57.00	57.00	25.00	27.00
"	5".....	93.00	95.00	95.00	30.00	31.00	60.00	62.00	62.00	27.50	29.50
"	6".....	108.00	110.00	110.00	32.00	33.00	63.00	65.00	67.00	29.75	30.50
"	7".....	240.00	245.00	250.00	65.00	70.00	130.00	134.00	180.00	55.00	59.00

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MAKE BALAS YOUR SOURCE OF SUPPLY

# BALAS

## PRICE LIST — Automatic Collets, Pushers and Pads

See footnote on page 12 regarding serrations.

Machine Name	Size, Model, Serial No.	COLLETS Conv.		Collet Master	PADS Master Collet		PUSHERS Conv., Heavy Duty, and Cage Type		Pusher Master	STEEL PADS Master Pusher	
		Rd.	Hex. Sq.		Rd.	Hex. Sq.	Rd.	Hex. Sq.		Rd.	Hex. Sq.
Davenport DA-2	to 1/2" Cap. Model B	8.60 B	8.60 D				3.30 B	3.75 D	4.12	2.09	2.92
" DA-2A	1/2" to 5/8" Cap.	Collets same as above Pushers Solder Type					3.90	4.90	5.50	2.80	3.80
" 1922	Oversize Spindle to 3/4" Cap.	8.20	9.00				4.55	5.00	5.35	2.50	3.33
ECONOMY	LST-4 up to 1/2" capacity										\$15.50
SHAVER	1692-FRB up to 3/4" capacity for 1" machine										\$15.50
COLLETS	2380-D 13° from 3/4 to 1" capacity for 1" machine										\$15.50
Footo Burt	1 1/16" Cap.	10.80	11.80	11.80	6.50	7.50	6.50	7.50	7.80	3.50	4.50
"	1 5/8" Cap.	17.50	18.50	18.50	8.00	9.00	12.60	13.60	13.60	5.50	6.25
Greenlee	6 Spindle										
"	1" YM										
"	All Machines	\$ 8.30 B	\$ 9.30 D	\$ 9.30	\$ 5.00	\$ 6.00	\$ 6.80 B	\$ 7.80 D	\$ 7.80	\$ 3.50	\$ 4.50
"	1 5/8" YA										
"	All Machines	20.70 B	22.00	22.00	6.00	7.00	13.00	14.00	14.00	4.50	5.50
"	2" YL										
"	All Machines	27.00	28.00	28.00	8.00	9.00	20.00	21.00	21.00	5.50	6.25
"	4 Spindle										
"	7/8" YM										
"	All Machines	8.30	9.30	9.30	4.10	4.75	6.80	7.80	7.80	3.20	4.20
"	1" YM										
"	All Machines	8.30 B	9.30	9.30	5.00	6.00	6.80 B	7.80 D	7.80	3.50	4.50
"	1 1/4" YG										
"	to Ser. # A186	10.80	11.80	11.80	6.00	7.00	7.40	8.40	8.40	4.50	5.50
"	1 3/8" YA										
"	from Ser. # A183	20.70	22.00	22.00	6.00	7.00	11.00	12.00	12.00	4.50	5.50
"	1 1/2" YG										
"	to Ser. # A186	13.50	14.50	14.50	6.00	7.00	9.00	10.00	10.00	4.50	5.50
"	1 1/2" YA										
"	from Ser. # A183	20.70	22.00	22.00	6.00	7.00	12.00	13.00	13.00	4.50	5.50
"	1 5/8" YA										
"	from Ser. # A183	20.70 B	22.00	22.00	6.00	7.00	13.00	14.00	14.00	4.50	5.50
"	1 3/4" YL										
"	to Ser. # A141	20.70	22.00	22.00	6.00	7.00	13.00	14.00	14.00	4.50	5.50
"	1 3/4" YL										
"	from Ser. # A148	40.00	42.00	42.00	8.00	9.00	16.20	17.20	17.20	5.50	6.25
"	2" YL										
"	to Ser. # A141	27.00	28.00	28.00	8.00	9.00	20.00	21.00	21.00	5.50	6.25
"	2" YL										
"	from Ser. # A148	40.00	42.00	42.00	8.00	9.00	20.00	21.00	21.00	5.50	6.25
"	2 1/4" YL										
"	to Ser. # A141	27.00	28.00	28.00	8.00	9.00	20.00	21.00	21.00	5.50	6.25
"	2 1/4" YL										
"	from Ser. # A148	40.00	42.00	42.00	8.00	9.00	23.40	24.40	24.40	8.00	8.75
"	2 1/2" YL										
"	from Ser. # A148	40.00	42.00	42.00	10.00	11.00	27.00	29.00	29.00	8.00	8.75
"	2 5/8" YL										
"	from Ser. # A148	40.00	42.00	42.00	11.50	12.50	27.00	29.00	29.00	9.75	10.50
Gridley	Single Spindle and Four Spindle										
"	3/4" -F	7.00	8.00				5.00	6.00	6.00	3.20	4.20
"	7/8" -F	7.60	8.60				6.00	7.00	7.00	3.20	4.20
"	1 1/4" -F	10.30	11.30	11.30	6.00	7.00	7.20	8.20	8.20	4.50	5.50
"	1 3/8" -F	11.70	12.70	12.70	6.00	7.00	7.70	8.70	8.70	4.50	5.50
"	1 3/4" -F	14.00	15.00	15.00	8.00	9.00	12.50	13.50	13.50	5.50	6.25
"	1 7/8" -F	14.00	15.00	15.00	8.00	9.00	12.50	13.50	13.50	5.50	6.25

A — round by 16ths  
E — hex by 32nds

B — round by 32nds  
F — hex by 64ths

C — round by 64ths  
G — masters in stock

D — hex by 16ths  
I — serrated round by 16ths

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# BALAS

## PRICE LIST—Automatic Collets, Pushers and Pads

See footnote on page 12 regarding serrations.

Machine Name	Size, Model, Serial No.	COLLETS Conv.		Collet Master	PADS Master Collet		PUSHERS Conv., Heavy Duty, and Cage Type		Pusher Master	STEEL PADS Master Pusher	
		Rd.	Hex. Sq.		Rd.	Hex. Sq.	Rd.	Hex. Sq.		Rd.	Hex. Sq.
Gridley	2 1/4" -F	27.90	28.90	28.90	10.00	11.00	20.00	21.00	21.00	8.00	8.75
"	2 3/8" -F	27.90	28.90	28.90	10.00	11.00	20.00	21.00	21.00	8.00	8.75
"	2 5/8" -F	40.00	41.00	41.00	10.00	11.00	21.00	23.00	23.00	8.00	8.75
"	3 1/4" -F	50.00	52.00	52.00	13.00	14.00	30.00	32.00	32.00	11.50	12.50
"	4 1/4" -F	60.00	62.00	62.00	18.00	19.00	40.00	42.00	42.00	15.00	16.00
"	4 5/8" -F	65.00	67.00	67.00	18.00	19.00	44.00	46.00	46.00	15.00	16.00
"	5" -F	70.00	72.00	72.00	21.50	22.50	50.00	52.00	52.00	18.50	19.50
"	5 1/4" -F	75.00	77.00	77.00	23.00	24.00	54.00	56.00	56.00	20.00	21.00
Gridley	9/16" -G	6.50 B	7.50 D				4.00 B	5.00 D	5.00	2.20	3.20
"	7/8" -G	7.20	8.20				6.30	7.30	7.30	3.20	4.20
"	1 1/4" -G	10.80 B	11.80 D	11.80 G	6.00 A	7.00 D	7.40 B	8.40 D	8.40	4.50	5.50
"	1 3/8" -G GA	12.00	13.00	13.00	6.00	7.00	8.10	9.10	9.10	4.50	5.50
"	1 1/2" -G	13.50	14.50	14.50	6.00	7.00	9.00	10.00	10.00	4.50	5.50
"	1 5/8" -G GA	17.50 A	18.50	18.50 G	6.00 A	7.00 D	12.60 A	13.60	13.60	4.50	5.50
"	1 3/4" -G	21.60	22.60	22.60	8.00	9.00	16.20	17.20	17.20	5.50	6.25
"	2 3/8" -G GA	45.00	47.00	47.00 G	11.50 A	12.50 D	27.00	29.00	29.00 G	9.75 A	10.50 D
"	2 7/8" -G	48.00	50.00	50.00	11.50	12.50	27.00	29.00	29.00	9.75	10.50
"	3 1/2" -G GA	54.00	56.00	56.00	16.00	17.00	36.00	38.00	38.00	12.50	13.50
New Britain, Gridley	5/8" #60, #204, #605	\$7.00	\$8.00				\$6.00	\$7.00			
"	7/8" #40, #60, #407	7.20	8.20				6.30	7.30	\$6.80	\$3.20	\$4.20
"	1" #40, #60, #172, #226, #263, #408, #410, #608	8.30 B	9.30 D	9.30 G	5.25 A	6.25 D	6.80 B	7.80 D	7.80	3.50	4.40
"	1 1/4" #601	10.80	11.80	11.80 G	6.00 A	7.00 D	7.40	8.40	8.40 G	4.50 A	5.50 D
"	1 3/8" #42, #61, #413	12.00	13.00	13.00	6.50	7.50	8.10	9.10	9.10	4.50	5.50
"	1 5/8" #41, #42, #61, #206, #415, #656	17.50 A	18.50	18.50 G	7.00 A	8.00 D	12.60 A	13.60	15.00	5.00	6.00
"	1 3/4" #41, #415, #506	21.60	22.60	24.50	8.00	9.00	16.20	17.20	18.00	6.00	7.00
"	2" #41, #42, #61	27.00	28.00	28.00	9.00	10.00	20.00	21.00	21.00	6.50	7.25
"	2 1/4" #41, #42, #61, #415, #656	36.00	37.00	37.00 G	10.00 A	11.00 D	23.40	24.40	24.40	8.00	8.75
"	2 3/8" #42	45.00	47.00	47.00	11.50	12.50 A	27.00 D	29.00	29.00	9.75	10.50
New Britain Chuckers		Prices on Application.									
Warner & Swasey	1 3/4" .....	20.00	21.00	21.00	7.00	8.00	15.00	16.00	16.00	5.00	6.00
"	2 1/4" .....	34.00	35.00	36.00	9.50	10.50	23.00	24.00	24.00	7.50	8.25

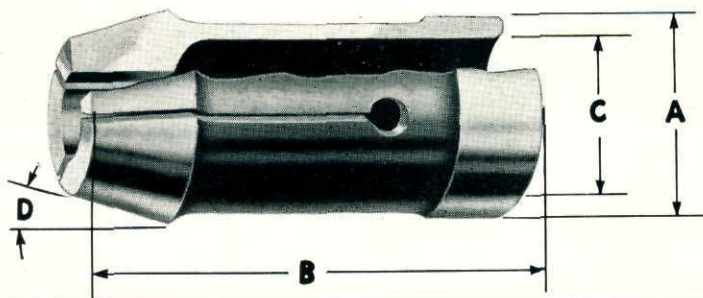
NOTE: Please specify on all orders for Master Collets, Pushers and Pads, the Name, Model, Manufacturer or Design of the items wanted.

SERRATED COLLETS AND COLLET PADS — It is standard practice to serrate all collets and collet pads for Automatic machines except Brown & Sharpe when the hole size is 3/8" or larger.

SMOOTH COLLETS AND COLLET PADS — Smooth collets are supplied for Automatics only when specified on your order if the hole size is larger than 3/8".

TURRET LATHE, BROWN & SHARPE and LATHE COLLETS are always supplied smooth unless otherwise specified.

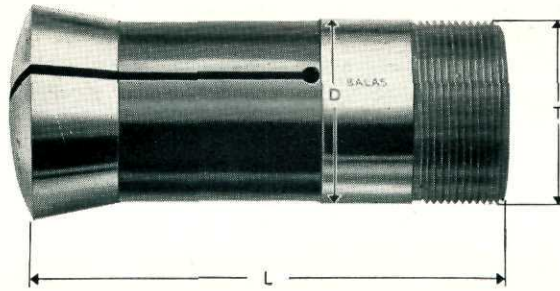
# BALAS



## PRICE LIST – Turret Lathe Collets and Pads

Machine Name and No.	Size, Model, Serial No.	Collet No.	A	B	C	D	COLLET Conv.		Collet Master	STEEL PADS Master Collet	
			Dia.	Length	Hole	Angle	Rd.	Hex. Sq.		Rd.	Hex. Sq.
Bardons & Oliver											
No. 0	3/8" Cap. #0		5/8	2"	13/32	13°	\$ 5.50	\$ 6.50			
No. 1	13/16" Cap. #1		1 1/8	2 3/4	13/16	13°	7.50	8.50			
No. 1	7/8" Cap. #3										
No. 2	1" Geared Electric Cap. #4		1 3/16	3"	15/16	13°	8.50	9.50			
No. 2	1" Cap. #4		1 3/8	3 1/2	1 1/32	13°	9.50	10.50			
No. 3	1 3/8" Geared Electric Cap. #4 1/2		1 3/8	3 1/2	1 3/32	13°	9.50	10.50			
No. 3 U.T.L.	1 1/2" Cap. #5		1 1/4	3 1/2	1 3/8	13°	12.00	13.00	18.11	4.50	5.63
No. 4	1 1/2" Cap. #5		1 1/4	3 3/4	1 1/2	13°	13.50	14.50	19.81	5.40	6.53
No. 4	1 3/4" Cap. #6		1 15/16	4 1/4	1 17/32	13°	13.00	14.00	24.91	5.40	6.53
No. 5 U.T.L.	2" Cap. #7		2 3/8	5 1/4	1 13/16	13°	16.00	17.00			
No. 7 U.T.L.	2" Cap. #7		2 5/8	5 3/4	2 1/16	13°	25.00	26.00	27.46	7.43	8.55
No. 7 U.T.L.	2 1/2" Cap. #7		2 5/8	5 3/4	2 1/16	13°	25.00	26.00	27.46	7.43	8.55
No. 9	2 5/8" Cap. #7		3 1/8	6 3/4	2 1/16	13°	30.00	31.50	38.68	9.90	11.00
No. 10	3 1/8" Cap. #7		3 7/8	6 1 1/2	2 1/8	13°	30.00	31.50	38.68	9.90	11.00
No. 10	3 1/16" Cap. #7		3 7/8	6 1 1/2	3 1/8	13°	54.50	59.50			
Foster											
No. 0	9/16" Cap. (Old)		7/8	2 1/2	5/8	12 1/2°	7.60	8.60			
No. 0	9/16" Cap. (New)		7/8	2 1/2	5/8	12 1/2°	7.60	8.60			
No. 1	13/16" Cap. (Old)		1 1/8	2 3/4	7/8	12 1/2°	8.50	9.50			
No. 1	13/16" Cap. (New)		1 1/8	2 3/4	7/8	12 1/2°	8.50	9.50			
No. 2	1 1/8" Cap. (Old)		1 1/8	3 1/2	1 1/8	12 1/2°	9.50	10.50			
No. 3	1 5/8" Cap. (Old)		1 5/8	4 1/4	1 3/8	12 1/2°	12.50	13.50			
No. 3	1 5/8" Cap. (New)		1 5/8	5"	1 3/8	12 1/2°	12.50	13.50	17.00	9.00	10.00
No. 3	1 5/8" Cap. (New) D. I.		1 5/8	5"	1 3/8	13°	15.00	16.00	19.00	9.00	10.00
No. 4	1 13/16" Cap. (New)		1 13/16	5 1/16	1 1/2	12°	14.00	15.00	20.00	9.00	10.00
No. 5	1 3/8" Cap. (Old)		2 3/16	5"	1 13/16	12 1/2°	16.00	17.00	20.00	9.00	10.00
No. 5	1 13/16" Cap. (New)		2 5/16	5 1/16	1 7/8	12 1/2°	18.00	19.00	22.50	10.00	11.00
No. 6	2 1/16" Cap. (New)		2 7/16	5 1/16	2 1/8	12 1/2°	19.00	20.00	23.50	10.00	11.00
No. 7	2 3/4" Cap. (New)		2 3/4	6"	2 3/4	12 1/2°	27.50	28.50	30.00	12.00	13.00
No. 1-B	1 13/16" Cap. (New)		2 3/8	6 1/2	2"	12 1/2°	31.50	35.00	40.00	10.00	14.00
No. 2-B	3 1/4" Cap. (New)		3 3/8	8 1/2	3 5/16	12 1/2°			100.00	15.00	20.00
No. 3-B	3 1/4" Cap. (New)		3 3/8	8 1/2	3 5/16	12 1/2°			140.00	27.00	30.00
Gisholt											
No. 3	1 1/2" Cap. #3Y7112A		2 1/8	4 3/4	1 11/16	14°			\$ 31.00	\$ 8.50	\$ 10.50
No. 4	2" Cap. #4Y7112A		2 1/2	5 1/16	2 1/16	14°			39.50	10.50	12.50
No. 5	2 1/2" Cap. #5Y7112		3 1/8	6 1/16	2 19/32	14°			57.00	14.00	16.00
No. 1-L	2 1/2" Cap. #5Y7112		3 1/8	6 1/16	2 19/32	14°			57.00	14.00	16.00
No. 2-L	3 1/2" Cap. #2L06002B		4 1/8	8"	3 5/8	14°			86.00	21.00	23.00
No. 3-L	4 1/2" Cap. #3L0561		5 1/8	8 1/2	4 5/8	14°			216.00	33.00	35.00
Oster											
No. 1	1 1/2" Cap. #601531 P. O.		2 1/16	4 3/4	1 9/16	14°	\$ 13.00	\$ 14.00	21.50 G	7.20 A	9.00 D
No. 2	1 1/2" Cap. #601505 D. I.		2 1/16	5"	1 19/32	14°	21.60	22.60	28.60 G	7.20 A	9.00 D
Warner & Swasey											
No. 1	5/8" Cap. #1		7/8	2 17/32	41/64	14°	7.40	8.40			
No. 12"	7/8" Cap. #2-1896		1 1/8	3"	29/32	14°	8.40	9.50			
No. 2	1" Cap. #2-1899		1 1/8	3"	11/32	14°	8.40	9.50			
No. 1, 12"	1" Cap. 14"		1 1/8	3 13/16	11/32	14°	8.40 A	9.50			
No. 2, 14"	1 1/8" Cap. 16"		1 1/2	3 13/16	1 1/16	14°	10.50	11.10			
No. 4	1 1/4" Cap. #377-1015		1 7/8	4 9/16	1 1/16	14°			19.80 G	5.50 A	6.25 D
No. 4	1 1/2" Cap. #4		1 7/8	4 9/16	1 1/16	14°	12.20	12.80			
No. 3, No. 4	1 1/2" Cap. #461-1033		2 1/16	4 3/4	1 9/16	14°	13.80	14.90			
No. 3, No. 4	1 1/2" Cap. #461-1002		2 1/16	4 3/4	1 9/16	14°			19.80	5.00	5.50
No. 4	1 1/2" Cap. #1369-1008		2 1/16	6"	1 13/16	14°			33.90	5.00	5.50
No. 4	1 1/2" Cap. #1129-1016		2 1/4	6"	2 1/16	14°			46.60	5.00	5.50
No. 4	1 3/4" Cap. #1369-1046		2 1/4	6"	1 13/16	14°	25.30	27.00			
No. 4	2" Cap. #1129-1020		2 3/4	6"	2 1/8	14°	25.30	27.00			
No. 4	1 3/4" Cap. #1369-1003		2 1/4	6"	1 13/16	14°			27.20	6.25	7.00
No. 4, No. 5	2" Cap. #1129-1002		2 3/4	6"	2 1/8	14°			30.70	6.25	7.00
No. 6	2" Cap. #387-1028		2 11/16	5 1/2	2 3/16	14°			28.80	9.00	9.50
No. 5	2" Cap. #1249-1018		3 1/8	6 1/2	2 5/8	14°			46.60	6.25	7.00
No. 6	2 1/4" Cap. #6		2 11/16	5 1/2	2 3/16	14°	25.30	27.00			
No. 5, No. 6	2 1/4" Cap. #357-1003		3 1/8	6 1/2	2 3/8	14°			34.90	8.00	9.00
No. 5, No. 6	1 5/8" Sq. Cap. #357-1008		3 1/8	6 1/2	2 3/8	14°			34.90		9.00
No. 5, 1-A	2 1/2" Cap. #471-1001		3 1/8	6 1/2	2 5/8	14°			43.40	7.75	8.25
No. 5, 1-A	2 5/8" Cap. #471-1040		3 1/8	6 1/2	2 11/16	14°	34.00	37.50			
No. 5, 2-A	2 1/2" Cap. #493-1016		3 1/8	6 1/2	2 11/16	14°			30.00	17.00	18.75
No. 5, 2-A	3 1/4" Cap. #404-1008		3 1/8	6 1/2	2 11/16	14°			40.00	18.75	19.75
No. 5, 3-A	3 1/2" Cap. #404-1008		3 1/8	6 1/2	2 11/16	14°			40.00	18.75	19.75
No. 5, 3-A	4 1/2" Cap. #533-1008		4 1/2	8 1/2	3 1/2	14°			63.00	22.00	23.00
No. 5, 4-A	4 1/2" Cap. #533-1008		4 1/2	8 1/2	3 1/2	14°			63.00	22.00	23.00
No. 5, 4-A	6" Cap. #1959-7		6"	12"	4"	14°			130.00	49.50	55.00

# BALAS



## PRICE LIST—Lathe and Milling Machine Collets

Balas Collets are made from carefully selected steels, scientifically Heat Treated, and are Ground Inside and Out, thereby insuring complete accuracy.

Collet	Collet Name	CAPACITY			MAJOR DIMENSIONS			PRICE EACH	
		Round	Square	Hexagon	D Diameter	T Thread	L Length	Round	Sq. & Hex.
1A	South Bend #1A.....	1/2	11/32	7/16	.650	.645-26 RH	2-9/16"	\$ 4.00	\$ 7.00
1AM	Ames 1" Cap.....	1"	23/32	7/8	1.125	1.120-24 RH	3-29/32	5.50	8.50
1B	Becker #1.....	5/16	7/32	17/64	.437	.312-30 RH	1-3/4	3.75	6.75
1C	Cataract #1.....	1/4	11/64	7/32	.335	.325-40 RH	1-7/16"	3.50	6.50
1J	Sjogren #1.....	1"	23/32	7/8	1.250	1.245-20 RH	3"	6.00	9.00
1RP	Reed Prentiss 12".....	1/2	11/32	7/16	.750	.734-20 RH	4-1/4	5.50	7.50
2A	South Bend #2A.....	11/16	15/32	19/32	.860	.850-20 RH	3-5/16	4.25	7.25
2AB	Becker #2A.....	9/16	25/64	31/64	.750	.500-20 RH	2-9/16	5.00	8.00
2B	Becker #2.....	1/2	11/32	7/16	.590	.437-26 RH	2-1/32	4.50	7.50
2C	Cataract #2.....	3/8	17/64	21/64	.450	.445-30 RH	1-13/16	3.25	6.25
2H	Hendy #2.....	5/8	7/16	17/32	.826	.812-20 RH	4-1/4	6.50	9.50
2J	Sjogren #2.....	1-3/8	31/32	1-3/16	1.625	1.620-18 RH	3-1/4	9.00	12.00
2L	LeBlond #2.....	3/4	17/32	21/32	.950	.945-20 RH	3"	5.25	8.25
2RP	Reed Prentiss #2.....	3/4	17/32	21/32	1.000	.984-20 RH	4-1/4	6.50	9.50
2S	Seneca #2.....	9/16	25/64	31/64	.750	.745-18 RH	3-15/64	4.50	7.50
2VB	Reed Prentiss #2V.....	1/2	11/32	7/16	.595	.437-26 RH	2-7/16	4.50	7.50
3AM	Ames 5/8" Cap.....	5/8	7/16	17/32	.750	.745-24 RH	3-3/16	4.50	7.50
3AT	Atlas.....	1/2	11/32	7/16	.687	.645-26 RH	2-5/16	4.00	7.00
3B	Becker #3.....	3/4	17/32	21/32	.875	.625-16 RH	3-7/16	5.75	8.75
3C	Cataract.....	1/2	11/32	7/16	.650	.645-26 RH	2-11/16	4.00	7.00
3H	Hendy #3.....	7/8	5/8	3/4	1.125	1.062-20 RH	4-7/16	7.50	10.50
3J	Sjogren #3.....	1-3/4	1-7/32	1-1/2	2.000	1.995-20 RH	3-3/4	13.00	16.00
3NS	Rivett #3NS.....	1/2	11/32	7/16	.687	.650-20 RH	2-7/8	4.50	7.50
3-OS	Rivett #3-OS.....	3/8	17/64	21/64	.590	.525-26 RH	2-3/32	3.25	6.25
3PN	Pratt & Whitney #3NS.....	1/2	11/32	7/16	.650	.645-24 RH	2-1/16	4.50	7.50
3PO	Pratt & Whitney #3-OS.....	3/8	17/64	21/64	6.00	.500-24 RH	2-1/16	4.00	7.00
3S	Seneca #3.....	3/4	17/32	21/32	1.000	.995-20 RH	4-19/32	5.25	8.25
3SS	Stark #3.....	3/8	17/64	21/64	.590	.511-25.4 RH	2-1/8	3.50	6.50
4C	Cataract #4.....	3/4	17/32	21/32	.950	.945-20 RH	3"	4.75	7.75
4H	Rivett #4H.....	1/2	11/32	7/16	.826	.661-20 RH	3-3/8	5.00	8.00
4NS	Rivett #4NS.....	5/8	7/16	17/32	.826	.812-20 RH	3-1/2	5.00	8.00
4-OS	Rivett #4-OS.....	1/2	11/32	7/16	.750	.670-20 RH	2-25/32	4.50	7.50
4PN	Pratt & Whitney #4.....	3/4	17/32	21/32	1.000	.995-16 RH	2-29/32	5.50	8.50
4S	Stark #4.....	3/4	17/32	21/32	.998	.988-20 RH	3-1/4	5.00	8.00
5C	Cataract #5.....	1"	23/32	7/8	1.250	1.245-20 RH	3-9/32	5.40	8.40
5NS	Rivett #5NS.....	7/8	5/8	3/4	1.062	1.050-20 RH	4-7/32	6.00	9.00
5-OS	Rivett #5-OS.....	3/4	17/32	21/32	1.062	.950-18 RH	3-13/32	4.25	7.25
5P	Pratt & Whitney #5.....	5/8	7/16	17/32	8.12	.807-24 RH	3-11/16	6.00	9.00
5PN	Pratt & Whitney #5.....	1"	23/32	7/8	1.3125	1.307-16 RH	3-13/32	7.50	10.50
5SC	Sloan & Chace #5.....	3/8	17/64	21/64	6.00	.500-26 RH	2-7/16	4.50	7.50
5V	Van Norman #5.....	5/8	7/16	17/32	8.50	.772-18 RH	3-7/8	6.75	9.75
5WA	Wade American #5.....	3/4	17/32	21/32	.970	.965-20 RH	3-3/8	4.25	7.25
6C	Cataract #6.....	1-3/8	31/32	1-3/16	1.625	1.620-18 RH	4-3/8	9.50	12.50
6H	Hendy #6.....	1-1/8	51/64	31/32	1.375	1.312-20 RH	4-3/4	10.00	13.00
6L	LeBlond #6.....	1"	23/32	7/8	1.250	1.187-20 RH	4-7/16	9.00	12.00
7C	Cataract #7.....	1-11/16	1-3/16	1-15/32	2.000	1.932-16 RH	5"	10.50	13.50
7P	Pratt & Whitney #7.....	7/8	5/8	3/4	1.125	1.120-20 RH	4-3/4	7.00	10.00
8C	Cataract #8.....	2"	1-7/16	1-3/4	2.375	2.370-12 RH	6"	12.00	15.00
8H	Hendy #8.....	1-1/4	7/8	1-1/16	1.500	1.437-20 RH	4-3/4	11.00	14.00
8WN	Wade American #8.....	1"	23/32	7/8	1.250	1.245-16 RH	3-29/32	5.00	8.00
10L	LeBlond #10.....	1-1/4	7/8	1-1/16	1.562	1.500-18 RH	5-1/2	11.00	14.00
10P	Pratt & Whitney #10.....	1-1/4	7/8	1-1/16	1.500	1.495-20 RH	4-3/4	8.00	11.00
15H	Hendy #15.....	1-3/4	1-7/32	1-1/2	2.030	2.000-18 RH	4-3/4	10.00	13.00
20V	Van Norman #112.....	1"	23/32	7/8	1.250	No Thread	3-11/16	8.00	11.00
22L	Van Norman #22 L.....	1"	11/16	7/8	1.2495	No Thread	3-11/16	8.00	11.00
22LU	Van Norman #22 LU.....	1"	11/16	7/8	1.2495	1.125-24 RH	3-11/16	8.00	11.00
32S	Stark #3-1/2.....	1/2	11/32	7/16	.703	.695-24 RH	2-9/16	3.50	6.50
32V	Van Norman #3-1/2.....	1/2	11/32	7/16	.680	.675-24 RH	2-3/8	3.75	6.75
42S	Stark #4-1/2.....	1"	23/32	7/8	1.250	1.245-20 RH	3-11/16	5.00	8.00
52SC	Sloan & Chace #5-1/2.....	5/8	7/16	17/32	.800	.795-20 RH	3-11/16	5.50	8.50
52V	Van Norman #5-1/2.....	3/4	17/32	21/32	1.000	.985-18 RH	3-7/16	7.00	10.00
115	Cushman #115.....	1-1/8	51/64	31/32	1.344	1.312-20 LH	3-1/2	8.00	11.00
215	Cushman #215.....	1-3/4	1-7/32	1-1/2	2.030	1.997-18 LH	4-3/4	12.50	15.50
315	Cushman #315.....	3-1/4	2-5/16	2-13/16	3.687	3.625-16 LH	5-1/2	36.00	40.50
.....	Kearney & Trecker.....	.....	.....	.....	.....	.....	.....	4.75	7.75

NOTE: Add 10% for odd decimal and metric size holes.

# BALAS

## PRICE LIST—Lathe and Milling Machine Collets

Locate Number of Collet in the Alphabetical List on this page. Then refer to Numerical List on opposite page for Specifications and Prices. Should a collet for any particular lathe or milling machine not be listed, forward sample or sketch, giving complete specifications. Prices for Special Collets furnished on application. For explanation of Red Letters — A, B, C, D, E, F, G, I, see Page 7.

### Standard Machine Using Draw-In Collets

### Collet No.

American 12", 14" and 16" Lathes	3H
American 18", 20" and 24" Lathes	6H
Ames 5/8" Capacity Bench Lathes	3AM
Ames 1" Capacity Bench Lathes	1AM
Ames 5/8" Capacity Bench Miller	3AM
Ames 1" Capacity Bench Miller	1AM
Atlas 9" and 10" Lathes	3AT

Becker No. 2 Vertical Miller	2B
Becker No. 2A Vertical Miller	2AB
Becker No. 3 Vertical Miller	3B
Boye & Emmes 14" and 16" Lathes	6H
Boye & Emmes 18", 20" and 22" Lathes	6H or 8H
Burke No. 0, 1, 2, 3, 4 and 5 Milling Machines	3C

Carroll & Jamieson 13", 14" and 16" Lathes	3H
Carter & Hakes Milling Machines	4-OS
Catacract No. 3 Bench Lathe (1/2" Capacity)	3C
Catacract No. 4 Bench Lathe (3/4" Capacity)	4C
Catacract No. 5 Bench Lathe (1" Capacity)	5C
Catacract No. 3 Bench Miller	3C
Catacract No. 4 Bench Miller	4C
Catacract No. 5 Bench Miller	5C
Catacract No. 3 Vertical Bench Miller	3C
Catacract 9" Quick Change Back-Geared Lathe	5C
Chard 16", 18" and 20" Lathes	6H
Chard 24" and 28" Lathes	8H
Cincinnati 14" and 16" Lathes	3H
Cincinnati 18" and 20" Lathes	6H
Cisco 14" Lathe	3H
Cisco 16", 18" and 20" Lathes	8H
Cushman Collet Chuck 1-1/8" Capacity	115
Cushman Collet Chuck 1-3/4" Capacity	215
Cushman Collet Chuck 3-1/4" Capacity	315

Dalton B-4 Lathe	C3
Dalton B-6 Lathe	3C or 4C
Davis 12" and 14" Lathes	2H
Davis 16" Lathe	3H
Davis 18" and 20" Lathes	6H

Elgin 3/4" Capacity Bench Lathe	4C
Elgin 1" Capacity Bench Lathe and Miller	5C

Fay & Scott 14", 16", 18" and 20" Lathes	5NS
Flather FMC 7" Lathe	3C
Flather 13" Lathe	4-OS
Flather 14" and 16" Cone Head Lathes	4NS
Flather 18" and 20" Cone Head Lathes	5NS
Flather 14", 16" and 20" Geared Head Lathes	5NS

Greaves Klusman 16" and 18" Lathes	3H
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Hamilton 14", 16" and 18" Lathes	5C
Hardinge Bench Lathes and Millers (See Catacract)	
Hendy 12" Cone Lathe	2H or 3H
Hendy 12" Geared Lathe	2H or 3H
Hendy 14" Cone or Geared Lathes	2H or 3H
Hendy 16" Cone or Geared Lathes	3H or 6H
Hendy 18", 20" and 24" Cone or Geared Lathes	6H or 8H

LeBlond (Regal) 10" Lathe	3C
LeBlond (Regal) 13" and 15" Lathes	2L or 4NS
LeBlond (Regal) 17" and 19"	6L
LeBlond (Regal) 21" and 24" Lathes	10L
LeBlond (Heavy Duty) 12" and 14" Lathes	6L
LeBlond (Heavy Duty) 16", 18" and 20" Lathes	10L
LeBlond (Rapid Production) 13" Lathe	6L
LeBlond (Rapid Production) 17" and 20" Lathes	10L
LeBlond (Multi-Cut) No. 6 Lathe	6L
LeBlond (Multi-Cut) No. 9 Lathe	10L
Leman 16" and 18" Lathes	5NS or 8WN
Logan 10" Lathes	1A

Monarch 9", 10", 11" and 12" O. S. Lathes	2H
Monarch 10" x 20" Lathe, also 10" Model EE	5C or 2J
Monarch 12" N.S. Lathe	3H
Monarch 14" and 16" Lathes (Cone Head)	3H
Monarch 14", 16", 18" and 20" Lathes (Geared Head)	6H
Monarch 24" to 36" Extra Heavy Duty Lathes	7C
Mueller 18" Lathe	6H

### Standard Machine Using Draw-In Collets

### Collet No.

Porter-Cable 9" Production Lathe	2H
Porter-Cable 12" Carbo-Lathe	5C
Porter-Cable (Mulliner) 12" and 14" Lathes	2H
Potter No. 3 Bench Lathe	2H
Potter No. 4 Bench Lathe	3C
Pratt & Whitney Bench Lathe	4C
Pratt & Whitney 10" Tool Room Lathe	3PO or 3PN
Pratt & Whitney 13" and 14" Lathes	5P
Pratt & Whitney 16" and 16-20" Lathes	7P
	10P

Rahn-Larmon 16", 18" and 20" Lathes, Series LN or AA	6H or 8H
Rahn-Larmon 20", 22", 24" and 26" Lathes, Series B, D or N	8H
Reed Prentice 12" Lathe	1RP
Reed Prentice 14" and 16" Lathes	2RP
Reed Prentice 18" and 20" Lathes	6L
Reed Prentice No. 2V, 3V and 3VG Vertical Miller	2VB
Rivett No. 3 N.S. Bench Lathe	3NS
Rivett No. 4 Bench Lathe	4-OS
Rivett No. 504-4 N. S. Bench Lathe	4NS
Rivett No. 608 Bench Lathe	4NS
Rivett No. 505, 606, 705, 5 N.S. Bench Lathe	5C or 5NS
Rivett No. 507 Bench Lathe	4S
Rockford (Sunstrand) 9", 15" and 16" Lathes	3H
Rockford (Economy) 12" Lathes	2H
Rockford (Economy) 14" and 16" Lathes	3H
Rockford (Economy) 22" Lathe	8H

Schauer 1" Capacity Speed Lathe	5C
Sebastian 11" Lathe (Oil Model)	2S
Sebastian (Viking), 12", 14", 16" and 18" Lathes	3H
Sebastian (Viking), 20" Lathe	6H
Sebastian (Gold Seal), 12", 14" and 16" Lathes	3H
Sebastian (Gold Seal), 18" and 20" Lathes	6H
Seneca or Star 10" and 12" Lathes	2S
Seneca or Star 14" Lathe	3S
Sheldon Lathe, 3/4" Collet Capacity	4C

Sidney Standard Pattern Lathes:	
12", Cone or Geared	2H
14" and 16", Cone or Geared	3H
18" and 20", Cone or Geared	6H
25", 27", 30" and 36"	#215 or 15H

Sidney Monotrol and Tritrol Lathes:	
12", 14", 16" and 18"	6H
18" and 20" (Heavy Pattern)	8H
24", 30" and 36"	#215 or 15H

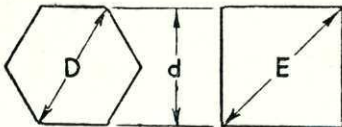
Siogren Chuck No. 1 — 1" Capacity	5C or 1J
Siogren Chuck No. 2 — 1-3/8" Capacity	2J
Siogren Chuck No. 3 — 1-3/4" Capacity	3J
Sloan and Chace No. 5 Bench Lathe	5SC
Sloan and Chace No. 5-1/2 Bench Lathe	52SC
South Bend 8" and 9" Lathes (1/2" Capacity)	1A or 3C
South Bend Lathe (1" Capacity)	5C
South Bend 11" Lathe	2S
South Bend 13" Lathe	2A or 4NS
South Bend 15" Lathe	4C
South Bend 16" Lathe	5C or 5NS
South Bend 18" Lathe	5C
South Bend 21" Lathe	6H
South Bend 24" Lathe	6C
Springfield 14" Lathe	2H or 6H
Springfield 16" Lathe	3H or 6H
Springfield 18" and 20" Lathes	6H
Springfield 24" and 26" Lathes	8H
Stark No. 3 Bench Lathe	3SS
Stark No. 3-1/2 Bench Lathe	32S
Stark No. 4 Bench Lathe	4S
Stark No. 4-1/2 Bench Lathe	42S
Stark Miller	4S

Van Norman No. 3-1/2 Bench Lathe	32V
Van Norman No. 5 Bench Lathe	5V
Van Norman No. 5-1/2 Bench Lathe	52V
Van Norman Millers	20V or 5V
Van Norman Millers	22L or 22LU

Wade American 3/4" Capacity Bench Lathe	5WA
Wade American 1" Capacity Bench Lathe	8WN
Walcott 14" Lathe	2H
Walcott 16", 18" and 20" Lathes	6H
Whitcomb Blaisdell 14" Lathe	4C
Whitcomb Blaisdell 16" and 18" Lathes	3H
Whitcomb Blaisdell 20" Lathe	6H
Willard 13" Lathe	3H
Worcester 12" Lathe	2H
Worcester 14" Lathe	3H

MAKE BALAS YOUR SOURCE OF SUPPLY

## DISTANCE ACROSS CORNERS OF HEXAGONS AND SQUARES



$$D = 1.1547 \text{ d}$$

$$E = 1.4142 \text{ d}$$

d	D	E	d	D	E	d	D	E
$\frac{1}{4}$	0.2886	0.3535	$1\frac{1}{4}$	1.4434	1.7677	$2\frac{5}{8}$	2.6702	3.2703
$\frac{3}{32}$	0.3247	0.3977	$1\frac{3}{32}$	1.4794	1.8119	$2\frac{3}{8}$	2.7424	3.3587
$\frac{5}{16}$	0.3608	0.4419	$1\frac{5}{16}$	1.5155	1.8561	$2\frac{1}{4}$	2.8145	3.4471
$1\frac{1}{32}$	0.3968	0.4861	$1\frac{11}{32}$	1.5516	1.9003	$2\frac{1}{2}$	2.8867	3.5355
$\frac{3}{8}$	0.4329	0.5303	$1\frac{3}{8}$	1.5877	1.9445	$2\frac{9}{16}$	2.9583	3.6239
$1\frac{13}{32}$	0.4690	0.5745	$1\frac{13}{32}$	1.6238	1.9887	$2\frac{5}{8}$	3.0311	3.7123
$\frac{7}{16}$	0.5051	0.6187	$1\frac{7}{16}$	1.6598	2.0329	$2\frac{11}{16}$	3.1032	3.8007
$1\frac{15}{32}$	0.5412	0.6629	$1\frac{15}{32}$	1.6959	2.0771	$2\frac{3}{4}$	3.1754	3.8891
$\frac{1}{2}$	0.5773	0.7071	$1\frac{1}{2}$	1.7320	2.1213	$2\frac{13}{16}$	3.2476	3.9794
$1\frac{17}{32}$	0.6133	0.7513	$1\frac{17}{32}$	1.7681	2.1655	$2\frac{7}{8}$	3.3197	4.0658
$\frac{9}{16}$	0.6494	0.7955	$1\frac{9}{16}$	1.8042	2.2097	$2\frac{15}{16}$	3.3919	4.1542
$1\frac{19}{32}$	0.6855	0.8397	$1\frac{19}{32}$	1.8403	2.2539	3	3.4641	4.2426
$\frac{5}{8}$	0.7216	0.8839	$1\frac{5}{8}$	1.8764	2.2981	$3\frac{1}{16}$	3.5362	4.3310
$2\frac{1}{32}$	0.7576	0.9281	$2\frac{1}{32}$	1.9124	2.3423	$3\frac{1}{8}$	3.6084	4.4194
$1\frac{11}{16}$	0.7937	0.9723	$1\frac{11}{16}$	1.9485	2.3865	$3\frac{3}{8}$	3.6806	4.5078
$2\frac{3}{32}$	0.8298	1.0164	$2\frac{3}{32}$	1.9846	2.4306	$3\frac{1}{4}$	3.7527	4.5962
$\frac{3}{4}$	0.8659	1.0606	$2\frac{3}{4}$	2.0207	2.4708	$3\frac{5}{8}$	3.8249	4.6846
$2\frac{5}{32}$	0.9020	1.1048	$2\frac{5}{32}$	2.0568	2.5190	$3\frac{3}{4}$	3.8971	4.7729
$1\frac{13}{16}$	0.9380	1.1490	$1\frac{13}{16}$	2.0929	2.5632	$3\frac{7}{8}$	3.9692	4.8613
$2\frac{7}{32}$	0.9741	1.1932	$2\frac{7}{32}$	2.1289	2.6074	$3\frac{1}{2}$	4.0414	4.9497
$\frac{7}{8}$	1.0102	1.2374	$2\frac{7}{8}$	2.1650	2.6516	$3\frac{9}{16}$	4.1136	5.0381
$2\frac{9}{32}$	1.0463	1.2816	$2\frac{9}{32}$	2.2011	2.6958	$3\frac{5}{8}$	4.1857	5.1265
$1\frac{15}{16}$	1.0824	1.3258	$1\frac{15}{16}$	2.2372	2.7400	$3\frac{11}{16}$	4.2579	5.2149
$3\frac{1}{32}$	1.1184	1.3700	$3\frac{1}{32}$	2.2733	2.7842	$3\frac{3}{4}$	4.3301	5.3033
1	1.1547	1.4142	2	2.3094	2.8284	$3\frac{13}{16}$	4.4023	5.3917
$1\frac{1}{32}$	1.1907	1.4584	$2\frac{1}{32}$	2.3453	2.8726	$3\frac{7}{8}$	4.4744	5.4801
$1\frac{1}{16}$	1.2268	1.5026	$2\frac{1}{16}$	2.3815	2.9168	$3\frac{15}{16}$	4.5466	5.5684
$1\frac{3}{32}$	1.2629	1.5468	$2\frac{3}{32}$	2.4176	2.9610	4	4.6188	5.6568
$1\frac{1}{8}$	1.2990	1.5910	$2\frac{1}{8}$	2.4537	3.0052	$4\frac{1}{8}$	4.7631	5.8336
$1\frac{5}{32}$	1.3351	1.6352	$2\frac{5}{32}$	2.4898	3.0494	$4\frac{1}{4}$	4.9074	6.0104
$1\frac{3}{8}$	1.3712	1.6793	$2\frac{3}{8}$	2.5259	3.0936	$4\frac{3}{8}$	5.0518	6.1872
$1\frac{7}{32}$	1.4073	1.7235	$2\frac{1}{4}$	2.5981	3.1820	$4\frac{1}{2}$	5.1961	6.3639

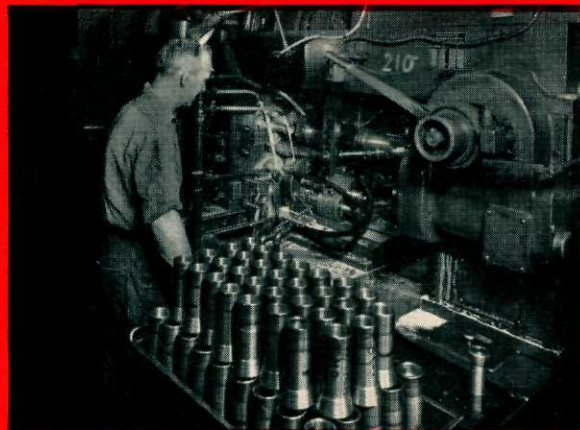
# WEIGHT TABLES

Size in Inches	STEEL				BRASS				ALUMINUM				Size in Inches
	ROUND		HEX.		ROUND		HEX.		ROUND		HEX.		
	Lbs. Per M Inches	Lbs. Per Foot	Lbs. Per M Inches	Lbs. Per Foot	Lbs. Per M Inches	Lbs. Per Foot	Lbs. Per M Inches	Lbs. Per Foot	Lbs. Per M Inches	Lbs. Per Foot	Lbs. Per M Inches	Lbs. Per Foot	
1/32	.2167	.00260	.2389	.002866	.257	.00308	.309	.00371	.08074	.00097	.09548	.00114	1/32
3/64	.4875	.00585	.5375	.006450	.563	.00675	.658	.00790	.1843	.00221	.2073	.00249	3/64
1/16	.8667	.01040	.9556	.011468	.982	.01179	1.138	.01366	.3239	.00389	.3628	.00461	1/16
3/32	1.950	.02340	2.150	.02580	2.185	.02622	2.491	.02989	.7281	.00874	.8122	.00975	3/32
7/64	2.654	.03185	2.927	.03512	2.959	.03551	3.354	.04025	.9882	.01186	1.099	.01319	7/64
1/8	3.467	.04160	3.822	.04588	3.847	.04620	4.342	.05211	1.286	.01543	1.429	.01715	1/8
5/32	5.417	.0650	5.972	.07168	5.976	.07176	6.717	.08061	1.998	.02398	2.219	.02662	5/32
11/64	6.554	.07865	7.228	.08672	7.223	.08667	8.100	.09721	2.414	.02897	2.678	.03214	11/64
3/16	7.800	.09360	8.602	.10320	8.593	.1031	9.619	.1154	3.872	.03448	3.182	.03818	3/16
7/32	10.615	.12740	11.700	.14050	11.65	.1398	13.03	.1564	3.895	.04675	4.317	.05180	7/32
15/64	12.190	.14620	13.440	.16120	13.37	.1605	14.93	.1792	4.470	.05365	4.949	.05938	15/64
1/4	13.87	.1664	15.29	.1835	15.20	.1824	16.96	.2035	5.081	.06100	5.623	.06750	1/4
9/32	17.56	.2106	19.35	.2322	19.21	.2306	21.41	.2569	6.423	.07709	7.108	.08530	9/32
19/64	19.56	.2346	21.56	.2587	21.40	.2568	23.83	.2860	7.152	.08584	7.913	.09498	19/64
5/16	21.67	.2600	23.89	.2867	23.69	.2843	26.38	.3165	7.920	.09506	8.762	.1051	5/16
11/32	26.22	.3146	28.91	.3469	28.65	.3438	31.86	.3824	9.577	.1149	10.59	.1271	11/32
23/64	28.65	.3438	31.60	.3792	31.29	.3756	34.80	.4176	10.46	.1255	11.58	.1388	23/64
3/8	31.24	.3744	34.41	.4128	34.07	.4088	37.86	.4544	11.39	.1367	12.59	.1511	3/8
13/32	36.62	.4394	40.38	.4845	39.99	.4796	44.38	.5326	13.36	.1603	14.76	.1772	13/32
27/64	39.49	.4738	43.55	.5225	43.09	.5168	47.84	.5740	14.40	.1728	15.92	.1910	27/64
7/16	42.47	.5097	46.85	.5619	46.32	.5555	51.43	.6170	15.48	.1858	17.12	.2054	7/16
15/32	48.78	.5850	53.75	.6450	53.14	.6375	58.97	.7076	17.76	.2132	19.63	.2356	15/32
31/64	52.05	.6246	57.40	.6887	56.75	.6807	62.97	.7554	18.97	.2277	20.96	.2516	31/64
1/2	55.47	.6656	61.16	.7339	60.45	.7251	67.05	.8046	20.20	.2425	22.32	.2679	1/2
17/32	62.62	.7514	69.06	.8285	68.33	.8198	75.92	.9110	22.84	.2741	25.24	.3029	17/32
35/64	66.36	.7963	73.17	.8779	72.43	.8692	80.42	.9650	24.21	.2906	26.73	.3208	35/64
9/16	70.20	.8424	77.41	.9288	76.60	.9191	85.04	1.0208	25.60	.3073	28.28	.3394	9/16
19/32	78.23	.9387	86.25	1.035	85.32	1.023	94.67	1.136	28.52	.3423	31.50	.3780	19/32
39/64	82.40	.9887	90.85	1.090	89.82	1.077	99.69	1.196	30.02	.3603	33.17	.3981	39/64
5/8	86.67	1.040	95.58	1.147	94.50	1.133	104.8	1.258	31.59	.3791	34.88	.4186	5/8
21/32	95.54	1.147	105.37	1.264	104.1	1.249	115.5	1.386	34.81	.4177	38.45	.4614	21/32
43/64	100.15	1.202	110.44	1.325	109.1	1.309	121.0	1.452	36.43	.4378	40.29	.4835	43/64
11/16	104.9	1.258	115.65	1.387	114.3	1.370	126.7	1.520	38.20	.4584	42.18	.5061	11/16
23/32	114.6	1.375	126.40	1.517	124.8	1.498	138.4	1.661	41.74	.5009	46.09	.5530	23/32
47/64	119.7	1.436	131.95	1.583	130.3	1.564	144.5	1.734	43.56	.5228	48.11	.5771	47/64
3/4	124.8	1.498	137.60	1.651	135.9	1.631	150.7	1.809	45.44	.5452	50.17	.6020	3/4
25/32	135.2	1.625	147.4	1.792	147.4	1.769	163.4	2.039	47.28	.5614	52.04	.6230	25/32
51/64	141.0	1.691	155.4	1.864	153.3	1.840	170.0	2.039	51.28	.6153	56.61	.6793	51/64
13/16	146.5	1.758	161.5	1.938	159.4	1.913	176.7	2.120	53.30	.6396	58.84	.7061	13/16
27/32	157.9	1.896	174.2	2.090	171.9	2.063	190.4	2.285	57.48	.6897	63.45	.7614	27/32
55/64	163.9	1.966	180.7	2.168	178.3	2.140	197.5	2.370	59.61	.7153	65.80	.7896	55/64
7/8	169.8	2.038	187.3	2.247	184.8	2.218	204.7	2.456	61.80	.7413	68.21	.8186	7/8
29/32	182.2	2.186	200.9	2.411	198.3	2.379	219.5	2.634	66.28	.7953	73.16	.8780	29/32
59/64	188.6	2.263	207.9	2.495	205.2	2.462	227.1	2.725	68.58	.8229	75.70	.9085	59/64
15/16	194.9	2.340	215.0	2.580	212.2	2.546	234.8	2.818	70.92	.8509	78.27	.9393	15/16
31/32	208.2	2.498	229.6	2.755	226.5	2.718	250.7	3.009	75.71	.9085	83.56	1.003	31/32
63/64	215.0	2.580	237.0	2.844	233.8	2.806	258.9	3.106	78.16	.9379	86.28	1.035	63/64
1	221.9	2.662	244.6	2.935	241.3	2.895	267.1	3.205	80.67	.9679	89.03	1.068	1
1- 1/32	236.0	2.832	260.2	3.122	256.8	3.081	284.5	3.414	85.85	1.030	94.73	1.137	1- 1/32
1- 1/16	250.5	3.006	276.2	3.314	272.6	3.271	302.0	3.623	91.14	1.094	100.6	1.207	1- 1/16
1- 3/32	265.4	3.185	292.7	3.512	288.8	3.465	319.8	3.837	96.55	1.158	106.6	1.279	1- 3/32
1- 1/8	280.8	3.370	309.6	3.715	305.6	3.667	338.4	4.060	102.2	1.226	112.7	1.353	1- 1/8
1- 3/16	312.9	3.755	345.0	4.140	340.4	4.084	376.9	4.523	113.8	1.365	125.6	1.507	1- 3/16
1- 7/32	329.5	3.955	363.4	4.361	358.5	4.302	396.7	4.761	119.9	1.438	132.2	1.587	1- 7/32
1- 1/4	346.7	4.160	382.3	4.587	377.1	4.525	417.4	5.008	126.1	1.513	139.1	1.669	1- 1/4
1- 5/16	382.3	4.587	421.5	5.058	415.7	4.987	460.0	5.520	138.9	1.667	153.3	1.840	1- 5/16
1-11/32	400.6	4.807	441.8	5.301	435.7	5.228	482.0	5.784	145.6	1.747	160.6	1.928	1-11/32
1- 3/8	419.5	5.034	462.6	5.550	456.1	5.474	507.7	6.056	152.5	1.829	168.1	2.019	1- 3/8
1- 7/16	458.5	5.502	505.5	6.068	498.4	5.980	551.4	6.617	166.6	1.999	183.8	2.205	1- 7/16
1-15/32	478.6	5.743	527.8	6.334	520.4	6.245	575.4	6.905	174.0	2.088	191.8	2.302	1-15/32
1- 1/2	499.2	5.990	550.5	6.605	542.6	6.512	600.2	7.203	181.4	2.177	200.1	2.401	1- 1/2
1- 9/16	541.6	6.499	597.3	7.168	588.6	7.064	651.3	7.814	198.1	2.378	220.7	2.649	1- 9/16
1-19/32	563.6	6.764	621.4	7.458	612.4	7.348	677.3	8.127	206.1	2.473	229.6	2.754	1-19/32
1- 5/8	586.0	7.031	646.0	7.752	636.8	7.638	704.1	8.449	214.3	2.572	238.6	2.863	1- 5/8
1-11/16	631.8	7.582	696.7	8.360	686.4	8.236	759.2	9.110	231.0	2.772	257.1	3.085	1-11/16
1-23/32	655.4	7.865	722.7	8.673	711.8	8.545	787.3	9.447	239.6	2.875	266.5	3.198	1-23/32
1- 3/4	679.4	8.153	749.3	8.992	737.8	8.856	816.1	9.793	248.3	2.980	276.3	3.316	1- 3/4
1-13/16	728.9	8.746	803.6	9.645	791.9	9.502	875.5	10.50	266.3	3.195	296.1	3.554	1-13/16
1-27/32	754.3	9.052	831.5	9.980	819.2	9.830	905.8	10.86	275.4	3.306	306.3	3.676	1-27/32
1- 7/8	780.0	9.360	860.0	10.32	847.3	10.17	936.7	11.24	284.9	3.418	316.8	3.801	1- 7/8
1-15/16	832.9	9.995	918.4	11.02	904.5	10.85	1000.0	12.00					

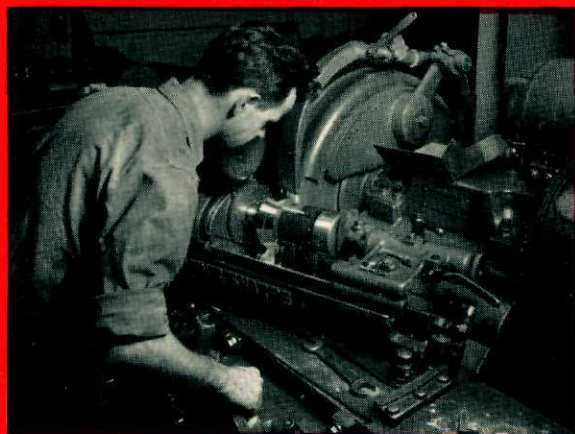
## THE HOME OF BALAS COLLETS



Making large collet (or feed finger as the case may be) blanks on 9" capacity bar machine.



Making collet blanks on multiple spindle automatics.



External grinding, producing the famous Cloverleaf shape.



Slotting intricate shapes, broaching squares, hexes and serrations.



Internal grinding. Where the parts get their accuracy ground into them.



Heat treating department where each and every collet receives four specific treatments to provide the permanent spring tension to the body and extreme hardness and wearability to the nose.

★ ★ ★ ★

THE *Balas* COLLET MANUFACTURING CO.  
1557 EAST 27TH STREET  
CLEVELAND 14, OHIO

TEL. MAIN 1-3734

June 21, 1951

W. C. Cowden Machinery Co.  
1207 West Genesee St.  
Syracuse 4, N. Y.

Gentlemen:

In reply to your postcard dated June 23,  
the only parts we make for Brown & Sharpe machines  
are collets, collet sleeves and chuck nuts.

Enclosed is a copy of our catalog.

Very truly yours,

THE BALAS COLLET MFG. CO.

*John Cox*  
Managing Partner

J.R.Cox  
zb  
Enc.



## BALAS COLLET MANUFACTURING CO.

Effective 12/1/50

### CONVENTIONAL COLLETS & PUSHERS

BROWN & SHARPE—	Fractional .....	10%
	Decimal .....	Net
	Serrated .....	Hex List Net
CLEVELAND AUTOMATIC—	Fractional .....	25%
	Decimal .....	10%
DAVENPORT AUTOMATIC—	Fractional .....	30%
	Decimal .....	20%
ALL OTHER AUTOMATICS UP TO AND INCLUDING 1 $\frac{1}{8}$ " CAPACITY—	Fractional .....	25%
	Decimal .....	10%
ALL OTHER AUTOMATICS OVER 1 $\frac{1}{8}$ " CAPACITY—	Fractional .....	33 $\frac{1}{3}$ %
	Decimal .....	15%
LATHE & MILLING MACHINES—	Fractional .....	List Net
	Decimal & Metric .....	List Plus 10%
TURRET LATHE—	Fractional .....	10%
	Decimal .....	Net

### ADJUSTABLE TENSION PUSHERS

BROWN & SHARPE—Model "A" & "PB" .....	5%
ALL OTHER SQUIRREL CAGE — { Up to 1 $\frac{1}{2}$ " Machine Capacity .....	15%
ALL OTHER "HEAVY DUTY" .....	
ALL OTHER "STOK SAVER" { Over 1 $\frac{1}{2}$ " Machine Capacity .....	20%

### MASTER COLLETS

MARTIN MASTER COLLETS .....	14%
"CB" MASTER COLLETS—(Standard Equipment for Acmes) .....	15%
"CT" MASTER COLLETS { .....	
OLD STYLE MASTER COLLETS (Pads held with screws through diameter of taper) .....	Net
TURRET LATHE MASTER COLLETS .....	Net

### MASTER PUSHERS

BROWN & SHARPE .....	5%
ALL OTHER MODEL "A" MASTER PUSHERS .....	15%
ALL OTHER "PB" MASTER PUSHERS (Standard Equipment for Acmes) .....	15%

### PADS, MASTER COLLET AND MASTER PUSHER

DAVENPORT—	Fractional .....	10%
	Decimal .....	Net
WARNER & SWASEY TURRET LATHE—	Fractional .....	List Plus 15%
	Decimal .....	List Plus 25%
ALL OTHER AUTOMATICS AND—	Fractional .....	Net
	TURRET LATHES { Decimal .....	List Plus 10%

### MISCELLANEOUS

SPOOL BUSHINGS .....	Net
SMALL HOLE SIZES .....	
Holes 1/16" to 1/32" .....	Regular Discount Plus \$2.00
Holes 1/32" and under .....	Regular Discount Plus \$4.00
BRONZE ITEMS .....	Hex List Plus 20%
RECTANGULAR COLLETS & PUSHERS .....	Hex List Plus 25%
RECTANGULAR ECCENTRIC COLLETS & PUSHERS .....	Hex List Plus 50%
ROUND HOLE ECCENTRIC COLLETS & PUSHERS .....	Hex List Plus 25%

### NOTE!

*Turret Lathe & B & S Collets are always made with smooth holes unless otherwise specified.*

*Automatic Collets (Except Brown & Sharpe) of over 23/64" Stock Size are always made serrated unless otherwise specified.*